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Investigation of the relationship between cognitive impairment and treatment responsivity in mentally disordered offenders

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ABSTRACT

Background

There appears to be clear evidence of cognitive impairment in schizophrenia which is wide ranging and relatively stable throughout the illness. Both cognitive impairment and treatment response have been argued to be highly relevant in risk assessment and management of offenders. However, there does not appear to be any research in this area on mentally disordered offenders. It is on this basis that this study attempts to determine the impact of cognitive impairment on treatment responsivity in mentally disordered offenders.

Method

A cohort quantitative research design was used and the data were obtained via the administration of neuropsychological assessments and self-report measures. Neuropsychological data on attention, executive functioning, memory and IQ were matched with treatment gain scores for 114 male mentally disordered offenders. The participants were further matched according to the group treatments they had participated in resulting in five different groups.

Results

Univariate and bivariate analyses were used to explore the relationship between cognitive predictor variables and treatment gain scores. Variables that were significantly associated with treatment gain scores were further investigated using multiple regression analyses. Results indicated that for each group, cognitive variables such as attention and memory were significantly predictive of treatment gain scores.

Conclusion

The results indicate the need to consider cognitive impairment constructs such as attention, executive functioning, memory and IQ when determining appropriate interventions for mentally disorders offenders. Doing so may improve treatment responsivity and have a consequent impact on risk management and recidivism. The

research limitations are discussed in relation to the methodology used, and clinical implications and directions for future research are explored.

1 INTRODUCTION

1.1 Overview

Information on the prevalence of cognitive impairment in schizophrenia is presented and the consequent impact of this in terms of behaviour. The role of cognitive deficits in treatment outcomes is discussed, followed by exploration of treatment options available for mentally disordered offenders such as Cognitive Behavioural Therapy (CBT). Consideration is given to the many potential factors influencing treatment responsivity in mentally disordered offenders. Finally, the importance of addressing cognitive impairment in schizophrenia in relation to risk management is discussed.

1.2 Recidivism Amongst Mentally Disordered Offenders (MDO's)

A 'forensic' patient or Mentally Disordered Offender can be described as a patient subject to compulsory measures under mental health legislation, who has a significant history of offending behaviour and/or represents a significant risk to others, requiring specialist 'forensic' expertise in their care and management (Langton, 2010). There appears to be a popular perception exacerbated by the media of the "dangerousness" of mentally disordered offenders (McGuire, 2000). This may in part be due to the typically complex presentation of MDO's, who in conjunction with their offending behaviour, often present with multiple problems such as psychosis, substance misuse, personality disorder, and cognitive impairment (Forensic Mental Health Matrix Consultation Paper, 2011).

A retrospective analysis in the UK over a 38 year period illustrated that the number of murders committed by MDO's has steadily declined. Nonetheless, there is evidence to suggest that certain types of mental illness pose greater risk. A study comparing rates of violence in patient and non-patient samples found that psychotic symptoms accounted for almost all of the difference between the two groups (Link & Stueve, 1993). The study specifically identified paranoid delusions where individuals feel threatened as most closely associated with the risk of violence. More recently this finding has also been supported by O'Kane and Bentall (2000) who stated that persecutory delusions and

command hallucinations increased the risk of violence. Other factors associated with recidivism are having a diagnosis of personality disorder and being unmarried (Quinsey *et al*., 1975). This concurs with more recent research which found that anti-social personality disorder was associated with a greater risk of recidivism (Bonta *et al*., 1998). However, this meta-analytic review involving a sample of 15, 245 MDO's, found that the most accurate predictors of recidivism were demographic or criminal history variables rather than clinical variables such as diagnoses. This finding appears to be consistent with other research indicating young age, previous convictions and a diagnosis of psychopathy are all predictors of recidivism in MDO's (Buchanan, 1998).

Research on patients discharged from maximum security hospitals in the UK (also known as 'Special Hospitals') illustrates lower rates of recidivism and readmission than what may be expected given the severity of the initial index offence, and when compared to offenders without mental disorders (McGuire, 2000). Nonetheless, the research cited above indicates that mentally disordered offenders suffering from psychotic symptoms such as paranoid and persecutory delusions pose a greater risk of re-offending.

1.3 Treating Mentally Disordered Offenders

This study was conducted in a maximum secure psychiatric hospital in Scotland responsible for the care and treatment of 134 (at the time of writing) mentally disordered offenders, the majority of whom have a diagnosis of schizophrenia (62.6%)(State Hospital Medical Records Data, 2010). Cognitive impairment is a common feature in major psychiatric disorders and is significantly related to treatment outcome (Green & Nuechterlein, 1999). Given the high incidence of schizophrenia and other psychiatric disorders, combined with factors such as acquired brain injury and drug and alcohol misuse frequently evident in MDO's, the research discussed previously would suggest a high level of cognitive impairment must exist within this patient population. Data from 125 patients in maximum secure psychiatric care in Scotland who completed neuropsychological assessment indicated that 79% had an index score on the WAIS-III

that was within the borderline range i.e. between 70-79 where below 70 represents presence of a learning disability (O'Rourke, 2011).

Effective treatments for all types of offenders i.e. with or without mental disorder, are important in terms of reducing risk of future reoffending, improving their quality of life and increasing the likelihood of early discharge (Fishbein *et al*., 2006). Treatments such as cognitive-behavioural therapy (CBT) are generally considered effective but a significant proportion of prison inmates do not respond well, display poor engagement, behavioural and emotional control problems, high attrition rates, and continued behavioural incidents resulting in future recidivism (Fishbein *et al*., 2006). A review on the use of offending behaviour programmes for people with mental health problems, revealed a modest overall effect on reducing recidivism with rates varying from 10% or less to 24%, dependent on factors such as gender, age and risk of re-offending (Sainsbury Centre for Mental Health, 2008). This is in comparison to reconviction rates for offenders without mental health problems which have been reported as 65% within two years of release (Rutherford & Duggan, 2007). It would therefore appear that effective treatment is crucial in order to avoid repetition of treatment and delayed discharge.

1.4 Cognitive Behaviour Therapy (CBT) for Schizophrenia

CBT can be described as a talking therapy that attempts to change thoughts and behaviour by developing a formulation of the individual's difficulties, personal background and views of the world (Tai & Turkington, 2009). Beck (1979) stated that the key components of CBT were engagement with the patient, working together to develop a problem list and establishing clear goals for therapy. The emphasis of a joint collaborative approach to therapy was highlighted, particularly when developing a shared formulation or understanding of the person's difficulties. Initially CBT for schizophrenia focused on behavioural change by improving coping mechanisms, compliance with medication and social and independent living skills (Weiden *et al*., 1995). Behavioural strategies such as graded activity programmes were used to treat

negative symptoms (Miechenbaum & Cameron, 1973). The cognitive element in treating psychosis was later incorporated by highlighting the importance of the meaning or interpretation of events, and how biased information processing, increased attention to the perceived threat and avoidance behaviours can lead to the development of false beliefs (Tai & Turkington, 2009). Additional amendments to standard CBT have been made such as addressing the stigma of being labeled schizophrenic, and providing information on the number of other people who have similar experiences i.e. normalising.

There is a significant evidence base for CBT in treating numerous disorders such as anxiety and depression as well as psychotic disorders such as schizophrenia (Kingdon & Turkington, 1994). Moderate effect sizes have been found in randomised controlled trials of CBT for schizophrenia, with gains in both positive and negative symptoms at the end of treatment and follow-up (Gould *et al*., 2001). However, CBT is less effective if the individual lacks insight into their mental health problems or delusional beliefs. Furthermore, comorbid presentations are less likely to benefit as these individuals are more difficult to engage and treat. A meta-analysis of CBT for schizophrenia found that acute presentations benefitted more than chronic presentations, indicating the difficulty treating more complex and longstanding cases (Zimmermann *et al*., 2005). As a result of the consistent evidence in support of CBT for schizophrenia, the National Institute of Clinical Excellence (NICE)(2002) recommend that CBT is routinely offered to patients with symptoms of schizophrenia.

1.5 Psycho-education for Psychosis

Other approaches for treating psychosis are psycho-education (PE) which has been described as a systematic didactic-psychotherapeutic intervention, designed to promote coping and inform patients and their relatives about the illness (Wiedemann *et al*., 2003). It appears to be a widely used approach with a survey revealing 72% of institutions in Austria, Germany and Switzerland had used PE for schizophrenia, primarily with patients (Rummel-Kluge *et al*., 2006). A meta-analysis of randomized

controlled trials where PE was the main intervention for schizophrenia and other psychosis was conducted by Lincoln *et al*., (2007). The analysis compared 18 studies on factors such as relapse, symptoms and knowledge of illness, medication adherence and daily functioning in patients. The findings indicated that PE with patients alone did not produce significant results, but if families were included there was a medium effect for relapse and a small effect for knowledge of illness at post-treatment. There was not a significant effect of PE on medication adherence, symptoms, and functioning. The analysis concluded that involvement of families in PE was worthwhile as otherwise it appears that PE with patients alone is not effective. Possible explanations for this finding were that PE programmes are primarily delivered in a lecture style, meaning that patients with attention or memory difficulties may struggle to retain the information. This may be why a more interactive format using behavioural components has been found to produce better results (Zygmunt *et al*., 2002).

1.6 Treatment Responsivity

The concept of treatment responsivity appears to be a wide one and can encompass many features such as treatment gain, adherence and motivation. These features can be broken down further into individual factors such as preferred learning style and external factors such as group versus individual therapeutic work. However, for the purposes of this study the aim is to measure treatment gain as it is beyond the scope of this study to assess all possible facets of treatment responsivity. Nonetheless, the importance of these other aspects of treatment responsivity should be taken into consideration when attempting to assess treatment gain and adherence, and will therefore be explored in further detail.

When reviewing "what works" with MDO's the literature on general offenders offers much more information than that available on offenders with mental health problems. However, McGuire (2000) suggests that rather than viewing this as a significant issue, the numerous studies on people with mental health problems as well as research on offender populations offer an alternative. By utilising what we know about mental health

research and offending behaviour research it is possible to offer interventions that target both these aspects with MDO's. In the offender literature, Andrews *et al*., (1986 & 1990) identified four principles for successful rehabilitation of offenders. Their findings were based on analysis of programmes that demonstrated above average success in reducing recidivism. The first principle is based on risk and states that treatment should be matched to the level of risk the offender presents. This is based on previous research findings that low risk offenders respond better to minimal interventions and high risk offenders to intensive treatment. The next principle is based on need and distinguishes between criminogenic and non-criminogenic needs. The former are risk factors, which if they can be reduced, can decrease recidivism. Non-criminogenic factors might be depression or anxiety which may not necessarily have a significant impact on recidivism if changed.

The third principle identified is responsivity and this states that methods of treatment should be matched to the preferred learning style of the offender. Matching therapists' style to the individuals' style combined with the style of intervention is crucial to treatment responsivity (Bonta, 1995). Therefore, being aware of an individual's cognitive deficits would appear to be highly relevant when establishing their preferred learning style, and in turn maximising their treatment responsivity. The responsivity principle and other factors related to offender motivation are a neglected area of research, despite the fact that they are widely recognised as crucial in determining the success of treatment (Brown, 1996).

The final principle states that following consideration of risk, need and treatment responsivity there is a need for professional judgement. This professional judgement principle recognises the need for clinical judgement to encompass all aspects of the individuals' presentation when determining treatment options.

Kennedy (2000) breaks down responsivity into three components which include matching the treatment approach to the learning style of the individual, the

characteristics of the therapist and patient, and matching the skills of the therapist with the treatment being delivered. The responsivity principle therefore states that these factors have a direct impact on treatment effectiveness and consequently on recidivism. To highlight this point the relationship between the therapist and patient has been described as a key factor in response to treatment (Medalia & Choi, 2009). This is vitally important as treatment programmes may fail not because of poor therapists or programme content, but because the individual's responsivity factors, such as cognitive impairments, have not been addressed.

Responsivity factors can also be broken down into internal and external factors (Kennedy, 2000). Internal factors are those specific to the individual such as motivation, personality characteristics, intellectual capabilities and demographic variables such as age and gender. External factors can range from those related to the therapist i.e. personality characteristics, and the setting in which treatment is conducted, for example, the community or a maximum security hospital and individual versus group work. The importance of factors such as therapist qualification, treatment intensity, patient motivation and work habits have been highlighted as moderating factors which can distinguish those who benefit on neuropsychological outcome measures (Medalia & Richardson, 2005). To highlight this point research has shown no significant difference between seven or 33 sessions of group cognitive remediation, indicating the role of various other factors affecting treatment response (Krabbendam & Aleman, 2003).

Kennedy (2000) states that it may be helpful to assess treatment readiness, motivation and treatability in an objective manner in order to determine the most appropriate treatment option. Rather than simply asking the offender's opinion and basing your opinion on their self-report, several factors may be relevant to consider in an assessment. Items might include whether or not the offender has the support of significant others, is able to express their feelings, has previously engaged in treatment and what progress they made, is motivated for treatment and able to set goals and recognises they have a problem. Further considerations might be the offenders' awareness of the emotional

demands of treatment, their sense of self-efficacy in making changes and their view on the therapist (Kennedy, 1999).

1.6.1 Theoretical Underpinnings of Treatment Responsivity

Serin (1998) proposes in his Treatment Responsivity Model that there should be pre-treatment appraisal of an individual's level of risk and consequent needs, assessment of treatment motivation and treatment gain. By combining treatment motivation and treatment gain he argues this can be considered as treatment responsivity. This model states that low motivation and low treatment gain indicate poor treatment responsivity and vice versa. By determining an individuals' responsivity level this can then be used in conjunction with their risk assessment to develop appropriate risk management plans. This is highly relevant in relation to reducing recidivism rates as mentioned previously. This model stems from the work of Andrews *et al.*, (1990) discussed previously in section 1.6 which became known as the Risk-Need-Responsivity (RNR) model. The principles they outlined for effective rehabilitation of offenders have had a significant influence on practice, theory and policy (Ward, Melser & Yates, 2007). Interventions for offenders that follow these principles are associated with a significant decrease in recidivism; and those which do not have minimal reduction in recidivism rates, and in certain situations, have increased recidivism (Andrews & Bonta, 2010).

In order to understand the variability in response to treatment Schunk and Zimmerman (2008) proposed the Reciprocal Interactions Model which considers how people learn. This model posits that learning occurs through the interaction of three factors: instructional techniques, motivation and cognitive ability. Instructional techniques relate to the importance of the method in which treatment is delivered, and the type of treatment that is utilised. Instructional factors that may impact on motivation are personalisation, choice and contextualisation (Medalia & Choi, 2009). Personalisation refers to modifying a learning activity to fit with the specific interests of an individual, for example using football related tasks and words when teaching problem solving skills to an individual who likes football. A further component of personalisation may be

getting the person to assume a specific role in a task or signing in by name. Choice involves giving the learner some control of the task by perhaps choosing the difficulty level, or which task they will perform as opposed to being told what to do. This may be particularly relevant if using computer based programmes where the element of individual choice is more easily achievable. Contextualisation is when the material is put into a real life context so that it is more easily understood and relevant to the individual rather than an abstract concept. All of these factors may impact on an individual's motivation to learn and therefore should be taken into consideration in order to maximise learning.

A recent study indicates that people with schizophrenia do respond to these instructional factors, as they have been shown to have greater intrinsic motivation when performing a cognitive task than those not exposed to the above instructional techniques (Choi *et al*., 2009). Participants in this study were given a cognitive task which was contextualised into something meaningful, personalised to the individual, and choices were provided during the task. The results indicated that adults with schizophrenia acquired more cognitive skill, had more motivation for the task, reported feeling more self-competent, and had improved attention post treatment in comparison to a control group who were not exposed to these instructional techniques. This finding suggests that adults with schizophrenia do respond to the same instructional techniques as people without schizophrenia.

Further evidence in support of the use of instructional techniques to enhance motivation comes from the Neuropsychological Educational Approach to Remediation (NEAR) programme, which utilises these methods and has been found to be effective at improving cognition in schizophrenia (Medalia *et al*., 2009). The NEAR programme was found to be effective across both inpatient and outpatient facilities for schizophrenic patients, and demonstrated sustained significant improvement in executive functioning, sustained attention, memory and social and occupational outcome at four month follow

up (Hodge *et al*., 2008). However, this study was in Australia and involved only 40 patients, revealing an average mild to moderate effect size.

The final factor of the Reciprocal Interactions model, cognitive ability, used to be viewed as the primary predictor of learning outcomes until the role of motivation and instructional techniques was also recognised (Schunk, 2004). Ability level refers to the pre-treatment intellectual ability of the individual which may predict their learning. If a severely impaired individual becomes frustrated that they are unable to learn a new task this may reduce their motivation to persevere. The extent of their impairment is also important as research indicates those with specific deficits are more able to generalise their learning, in comparison to those with global deficits who have greater difficulty generalising learning (Fiszdon *et al*., 2006). Longtitudinal research aimed at identifying the cognitive skills necessary to predict ability to benefit from computerised cognitive remediation, found that working memory, verbal learning and sustained auditory attention were essential in order to benefit (Kurtz *et al*., 2008). This would appear to reinforce the importance of considering baseline cognitive ability when deciding what the most appropriate intervention is.

1.6.2 Influence of Cognitive Impairment in Schizophrenia on Treatment Response

Cognitive impairment has been identified as a core symptom of schizophrenia which is present from first episode, and most pronounced in the areas of attention, executive functioning and verbal memory (Medalia & Choi, 2009). It has also been stated that cognitive impairment is not due to treatments such as anti-psychotic medication or a result of the symptoms of schizophrenia, but is a specific feature of the illness (Green, 2006). Heinrichs and Zakzanis (1998) conducted a meta-analysis of studies in the area of cognitive impairment in schizophrenia. In their review of 204 studies they concluded that all areas of cognition were affected in schizophrenia, and while attention and memory appeared to be most impaired, perception and semantic knowledge were least affected. In comparison to the general population 70-80% of schizophrenic patients

show cognitive deficits, and this increases to 100% when compared to the schizophrenic's own premorbid ability (Heinrichs & Zakzanis, 1998).

Gold (2004) concluded that there was little doubt of the presence of cognitive impairment in schizophrenia, and that it was pervasive in all aspects of cognitive functioning. It has also been shown to be significantly related to performance in work, interpersonal relationships and independent living (McGurk *et al.*, 2007). Furthermore, because of the importance of cognitive impairment in schizophrenia it has now been identified as an appropriate treatment target as evidenced by two National Institute of Mental Health initiatives i.e. Measurement and Treatment Research in Cognition in Schizophrenia (MATRICS) and Treatment Units for Research on Neurocognition in Schizophrenia (TURNS) (Gold, 2004).

Gold (2004) comments on the evidence supporting the stability of cognitive impairment over time. When comparing first episode schizophrenic patients to those with chronic conditions, the results indicate very similar cognitive deficits, both in terms of level and range of impairment. This finding has been supported by others such as Hutton *et al.,* (2002) who found a stable level of cognitive impairment from first episode through to later life. This study involved a group of 28 first episode patients with schizophrenia who were compared to a group of 22 patients with chronic schizophrenia. Both groups had matched controls and in comparison to the control group both demonstrated significant impairments on decision making performance. More recently this finding has been replicated in a study looking at both between and within subject stability of cognitive impairment in chronic schizophrenia (Pietrzak *et al*., 2009). In this study subjects were tested one month later and no significant difference in test performance was found from baseline scores. Furthermore, longitudinal research in this area has demonstrated evidence of this stability in the same group of 142 patients with schizophrenia over an average period of five years (Heaton *et al*., 2001). The retest time period in this study ranged from six months to ten years and involved subjects both over and under 65 years old. The results indicated that factors such as age, gender and length

of follow-up period did not impact on the level of cognitive impairment. This study also indicated that cognitive performance was stable regardless of changes in medication, symptoms or inpatient/outpatient status. These results concur with more recent research by Harvey *et al.,* (2005), who also found stable cognitive performance in the same group of older adults with schizophrenia who were re-tested after eight weeks. As such, Pietrzak *et al*., (2009) suggested that their findings corroborate previous research stating that cognitive impairment in schizophrenia is stable over time, and is not specific to any one cognitive domain. Furthermore, any variation in cognitive performance can be viewed as a result of the illness itself rather than mistakes in test administration.

1.6.3. Using Cognitive Deficits To Predict Treatment Response

A three year study conducted in the United States with 224 prison inmates attempted to assess the role of cognitive and emotional deficits in behavioural problems, the usefulness of neuropsychological measures in establishing poor responders, and the ability of these measures to predict response to treatment (Fishbein *et al*., 2006). Inmates participated in a CBT programme over a nine month period, and a battery of neuropsychological assessments were conducted pre and post treatment. Inmates were also assessed and categorised in terms of relevant clinical subtypes such as history of drug abuse, violence, and psychopathy. Anyone who did not comply with treatment remained in the study and was still assessed following the end of the treatment period. Non compliance was therefore viewed as a poor response to treatment. Following completion of the CBT programme performance outcome was measured and incidents of misconduct during treatment noted. The results indicated that neuropsychological deficits predicted treatment response i.e. reaction to treatment; gain i.e. benefit received from treatment; completion of treatment and institutional behaviour (all aspects of treatment performance that were measured in the study), over any other measure such as history of drug use or psychopathy. The study concluded that deficits in emotion regulation and executive cognitive function are strongly linked to treatment outcome. However, this study was based on a prison population recruited from three separate

medium/maximum security facilities meaning possible variance between the prisons in regards to programme delivery, knowledge of staff and other environmental factors. The subjects also did not have any pre-existing mental health difficulties and ranged between 21-49 years old, as older participants were excluded due to natural cognitive decline and the impact of chronic substance misuse on executive functioning. A further exclusion factor was an IQ below 70 although there was no rationale given for this. Furthermore, the sample was selected from prisoners who had volunteered to participate in the CBT programme, indicating that they were therefore already motivated to change. The issue of motivation is extremely significant in regards to treatment responsivity and is discussed in more detail in section 1.6.4.

A more recent study in the UK again attempted to use neuropsychological profiles to predict functional outcome, however this time with patients suffering from schizophrenia (Leeson *et al*., 2009). The study involved a four year longtitudinal design and followed 54 outpatients with schizophrenia in West London, who completed assessments when they first presented with psychosis, one year later and a final four year follow up. The results indicated that IQ predicted social functioning at four year follow up, and that general IQ was a more reliable and sensitive predictor than more specific measures of memory and executive functioning. However, this study only involved 54 patients who were community based and experiencing their first episode of psychosis. This is in contrast to mentally disordered offenders who are incarcerated and often present with chronic and treatment resistant schizophrenia, as well as co-mordid diagnoses such as personality disorder.

In sum, cognitive deficits do appear to be reliable predictors of response to treatment and from the research cited above, this finding is consistent across both patient and non patient samples.

1.6.4 Treatment Resistance

Preston (2000) identified various reasons why people may resist treatment and these will now be discussed. Firstly in individuals with mental health difficulties, the nature of the

disorder itself may make an individual more likely to resist treatment, as the symptoms they experience such as paranoia result in the inability to trust others. Examples of such disorders are personality disorders such as anti-social, borderline, paranoid and narcissistic which typically present with patient distrust, as well as psychopathy and paranoid schizophrenia. Another important variable in treatment resistance is the individual's personality as people who present as hostile, demanding and rebellious are more likely to resist treatment. Behavioural variables such as behaving in a violent manner or lacking motivation to change may also contribute to resistance. An individual may also fear engagement in therapy as they are concerned about confidentiality, or they feel hopeless about their ability to change. They may also be achieving secondary gains through their behaviour such as increased attention and therefore resist change due to self-serving bias.

The type of treatment given may also affect resistance by resulting in a poor match between the treatment and client. To illustrate this point, someone with low intellectual capability is unlikely to respond well to a talking therapy that does not take into consideration their literacy requirements, or level of comprehension. Further treatment factors affecting resistance may be the size of the group if participating in group therapy, or the length of treatment itself. However, a study comparing preferences for group or individual treatment found that matching clients to their preference did not result in improved treatment outcome (Renjilian *et al*., 2001). This finding was the opposite of what was hypothesized, however the study involved 75 obese adults participating in a weight loss programme and is therefore a very different population from MDO's.

The environment in which treatment is conducted can affect resistance and this is particularly relevant in a maximum secure psychiatric hospital where clients may feel they have no choice but to engage in treatment (Preston, 2000). This will be discussed further in section 1.6.4. Finally the importance of the therapeutic alliance has been highlighted as the main determinant of treatment resistance and therapeutic outcome. As such, the therapeutic alliance is the strongest predictor of treatment outcome and

accounts for the majority of variance in treatment outcome (Horvath & Symonds, 1991). This is of great significance if the people who provide therapy are also the people responsible for deciding your future, for example by recommending suitability for transfer to reduced security. Psychiatric nurses in a maximum secure psychiatric hospital perform a dual role of caring for patients whilst maintaining required security procedures which creates a further dilemma for both patients and staff. Psychiatric nurses are responsible for security aspects such as checking patients' rooms, conducting body searches and monitoring phone calls. These security regulations may be strongly disliked by patients' and therefore result in difficulties forming therapeutic relationships between nurses and patients (Burrow, 1998). It is also proposed that the balance between treatment and security is weighted in favour of security, and their may be professional disagreement regarding the aim being violence risk reduction or improving mental health (Blackburn, 2000). However, if security is viewed in terms of patient care then it is proposed that therapy and security can be combined effectively.

Andrews and Bonta (1994) have identified several important factors in treating offenders such as the relationship and contingency principles. The relationship principle states that a positive therapeutic relationship can facilitate learning, and the contingency principle states that clear boundaries and guidelines must be set between the patient and therapist. The therapist must also reinforce positive behaviour while disapproving of negative behaviour. This leads on to a further issue faced by staff working with MDO's which is their right to maintain their personal safety while delivering the best possible care to their patients (Needham, 2006). When engaging with patients, staff members are interpreting cues in terms of what it says about the patients' illness and their own personal safety i.e. the likelihood of being attacked (Whittingdon & Balsamo, 1998). This may therefore be considered another complication in establishing a therapeutic alliance as staff members are constantly alert to the threat of potential violence.

Within the hospital in this study, psychiatric nurses, psychiatrists and psychologists are trained in the delivery of psychological therapies resulting in a multi-disciplinary

approach to the delivery of psychological therapy. However, the issue of involving forensic psychiatric nurses in psychotherapeutic work itself is problematic for various reasons such as shift patterns and staffing constraints, making their attendance and participation in group therapy, for example, difficult (Bowers *et al*., 2000). Another factor is that basic nurse training does not teach therapeutic skills in any depth meaning nurses have to be dedicated and willing to pursue further training (Bowers *et al*., 2000). There may also be conflict and competitiveness between professional disciplines resulting in nurses' access to psychotherapy being hampered. For these reasons even nurses who may be interested in psychological approaches are deterred from becoming more involved, reinforcing a lack of understanding of patients' therapeutic needs. Given that nursing staff spend the most time with patients, this is an important consideration when attempting to enhance treatment responsivity.

Given that resistance is common in all therapeutic work it is inevitable in forensic populations due to the many variables discussed previously (Preston, 2000). MDO's typically present with co-morbid diagnoses such as schizophrenia and anti-social personality disorder, combined with a history of aggressive, violent behaviour and substance misuse problems. This makes motivation and engagement in therapy particularly problematic for an individual with numerous difficulties.

1.6.5 Factors Impacting The Therapeutic Alliance In A Maximum Secure Setting

The previous section reviewed several variables impacting on resistance to treatment such as the therapeutic alliance and environmental factors. In relation to environmental factors, Savicki and Cooley (1987) state that mental health nurses are at greater risk of developing burnout if they work with patients with complex and long-term mental illness, such as schizophrenia. They point out that these patients can be viewed as difficult to treat and resistant to change increasing the likelihood of staff burnout. Therefore, the staff who work in a maximum secure forensic setting such as the hospital in this study are at greater risk of burnout, as the majority of patients in their care are

complex and have long term mental health needs. A further consideration is the impact burnout can have on the therapeutic milieu. Research by Melchior *et al.,* (1997) has shown that staff can display less empathic behaviour, become cold, cynical, have negative views of the patients and avoid them.

Nurses have been found to both perpetuate stigma towards mental health and be recipients of such stigma (Ross & Goldner, 2009). This study reviewed the research in this area and found that nurses who chose to work in psychiatry had negative attitudes, and discriminated against people with bipolar personality disorder specifically. Psychiatric nurses were also found to be more pessimistic about the outcome of psychiatric illnesses than general nurses or the public. However, they also found stigma and discrimination within nursing, against colleagues with mental illness and colleagues who worked as psychiatric/mental health nurses. This may be an important factor if family and/or friends of staff members working in a maximum secure setting, face discrimination from their loved ones because of their job.

Forensic psychiatric nurses work with patients who may create feelings of fear, repulsion and disgust (Holmes *et al*., 2006). This may be due to the crimes they have committed as a burglar is less likely to cause as much anxiety or disgust as a paedophile who tortures and then kills his victims (Holmes *et al*., 2006). Forensic nurses therefore have to deal with the feelings created not only by the individual's crimes but also by their mental health problems (Jacob *et al*., 2009). Acknowledging these feelings is vital if staff wish to understand the potential impact of them on the therapeutic alliance (Jacob *et al*., 2009).

It has been noted that the use of pejorative language towards mentally disordered offenders by nurses in forensic psychiatry is common. This may occur by labelling patients with terms such as dangerous, manipulative, monsters, and liars in an attempt to dehumanise and depersonalise them (Holmes & Federman, 2003). Using such language can be powerful in establishing the mentally ill offender as 'other' and therefore

impacting on the therapeutic alliance (Holmes & Federman, 2003). It can also result in staff distancing themselves from patients and moving from therapeutic to more custodial practices.

A study by Ganong *et al*., (1987) demonstrated a higher probability of negative judgements of patients viewed as uncooperative and complaining, and who have chronic illnesses which make nursing staff feel ineffective. MDO's, particularly those with personality disorder match many of these criteria, meaning staff members are more likely to become alienated from them. More recent research by Schulze (2007) found that from ten studies reviewed of mental health workers attitudes, three quarters found similar or more negative attitudes towards the mentally ill than the general public. As a result it has been argued that mental health professionals have a significant role in contributing to the stigma surrounding mental health (Sartorius, 2002**).** This study goes on to state that stigma and discrimination are the biggest barriers to recovery by those suffering from mental illness. Read and Harre (2001) state that negative attitudes are more frequently displayed towards those who are most unwell. If this is the case this could have significant implications for staff working in forensic settings with extremely complex patients. Happell (2005) amongst others has stated that if mental health staff display negative attitudes it is likely to impact on patient care.

To summarise, the above information indicates that the attitudes of staff working in forensic settings towards patients is extremely important in terms of establishing a positive therapeutic milieu, and a strong therapeutic alliance. The research cited previously argues that the therapeutic alliance is key to determining if an individual will engage in treatment or resist, and it follows that this alliance will be significantly affected by the attitude of the therapist towards the patient.

1.6.6 Insight in Psychosis

Insight in regards to psychosis can be viewed as a lack of understanding or awareness of psychotic symptoms such as paranoia and delusions. Lack of insight is a common

feature of schizophrenia and has been linked to treatment compliance (Kamali *et al*., 2001). The importance of lack of insight in mentally disordered offenders is highlighted by its' inclusion as a risk factor in the HCR-20 violence risk assessment (Douglas, 2008). A recent study addressed the issue of insight into not only clinical symptoms of schizophrenia but also neuro-cognitive symptoms (Medalia & Thysen, 2010). As stated previously individuals with a diagnosis of schizophrenia will also have significant cognitive deficits in attention, executive functioning and memory. This study examined 71 patients with schizophrenia (15 inpatient and 60 outpatient) who were asked to complete measures to assess their clinical and neuro-cognitive symptoms. Clinicians were also asked to rate patients' level of insight into their cognitive abilities. The results indicated that 70% of patients had insight into their clinical symptoms in comparison to only 27% who had insight into their cognitive abilities. A possible explanation for the large difference between insight into clinical and cognitive symptoms may be that estimating cognitive ability is simply a difficult task even for healthy individuals. This was evidenced by Dunning *et al*., (2004) who found insight into cognitive ability was often inaccurate in healthy adults.

When considering the limitations of this study as stated previously the majority of the sample (79%) were outpatients and also 73% of the sample was male. Given that the overall sample was relatively small at 71 this makes it difficult to extrapolate findings to all patients with schizophrenia, particularly females and inpatients. There is also no information supplied on the presence of comorbid diagnoses which may have influenced the findings, and the study was conducted in America meaning that due to cultural differences results can not necessarily be applied to other parts of the world.

The findings from this study are important when considering the likelihood of patients adhering to treatments aimed at improving their cognitive abilities. If a patient does not perceive that they have cognitive deficits then they may be less willing to engage in interventions such as cognitive remediation. As discussed previously psycho-education has been shown to improve clinical symptoms of psychosis. Medalia & Thysen (2010)

note that all patients in their study were engaged in treatment that delivered psycho-education about psychosis but not cognitive deficits. As such they state that it may be beneficial to incorporate information on cognitive symptoms of psychosis in psycho-educational programmes. This is based on findings from a study which used a psycho-educational programme called 'Braincheck' to teach patients with schizophrenia about cognitive deficits in mental illness. The results revealed that patients with schizophrenia who participated in the programme had greater awareness of cognitive deficits in comparison to the control group. It would therefore appear that it is possible to improve insight into cognitive deficits.

Related to this is the concept of metacognitive training which has been developed to improve psychotic symptoms. Metacognitive refers to the ability to consider how your mind operates, and means that we are aware when we may have a false memory or when we jump to conclusions. The training aims to teach patients about cognitive biases and errors in problem solving as this may be involved in the development of delusional belief systems. People with psychosis are often unaware they have cognitive biases and are more prone to them (Moritz & Woodward, 2007). In support of metacognitive training a small pilot study was conducted which showed reduced severity and improved awareness of delusions, their illness, and the attribution of delusions to their illness combined with reduced depression (Favrod *et al*., 2010). However, this study involved only 18 participants in Switzerland and 11 of the sample participated in two cycles of the programme, meaning they received twice the dose of treatment that the remaining participants received. It may therefore be argued that participants are more likely to improve the more treatment they receive, and hence this may be a possible explanation for the findings, rather than the nature of the training itself. Although the authors acknowledge the small sample size and the exploratory nature of the study, it is proposed that the findings may serve as a blueprint for further research in this area.

Bentall *et al*., (2001) proposed an integrative model addressing the issue of how attributions influence self-representation which then influences future attributions. This

is known as the attribution self-representation cycle and it is argued that due to factors such as cognitive bias, negative events are attributed to external factors leading to a paranoid view of the world. Related to this the issue of social cognition in schizophrenia has been highlighted as a treatment target (Green *et al*., 2008). This is evidenced by its' inclusion in the MATRICS Consensus Cognitive Battery for clinical trials in schizophrenia as one of seven domains. As stated previously, understanding social cognition in schizophrenia may help explain the development of clinical symptoms such as delusions and paranoia, hence the need for further research in this area.

Over the past 20 years neurodevelopmental models of schizophrenia have been proposed to explain the aetiology of this illness. There is variation amongst these models but the main focus has been on injury to the brain during early development (Rapoport, 2005). It has been proposed that in any neurodevelopmental model of schizophrenia 80% of the model can be explained by genetic factors, meaning the rest must be accounted for by environmental factors affecting brain development. However, there is a lack of specificity regarding the timing of onset of the illness and studies in early onset patients are minimal. As such further research is necessary in order to ascertain if these findings are consistent across differing populations and a larger sample. Animal models of schizophrenia have also been explored using rats and monkeys to aid understanding of the processes involved in the illness. A study using rats with an insult to the hippocampus during maturation, resulted in abnormal dopamine related behaviours and deficits in working memory and social impairments, similar to the negative symptoms of schizophrenia (Lipska *et al*., 2004). This is in comparison to previous animal models that used permanent lesions to the hippocampus in rats, whereas the method involved in this study was temporary and reversible.

1.6.7 Motivation

Motivation can be viewed as an important internal treatment responsivity factor, and this has been described as the probability that a person will enter into, continue, and adhere to a particular plan (Miller & Rollnick, 1991). They argue that motivation is a dynamic

concept and as such can be influenced by external factors such as input from a therapist. This point is significant as it highlights the importance of environmental factors which influence treatment response, and recognizes that motivation is not soley dependent on internal characteristics. Kennedy (2000) states that the majority of offenders lack motivation and are resistant to treatment, often unwilling to accept they have a problem. They therefore require pre-treatment motivational interviewing (MI) to address these issues prior to any formal treatment. MI is a psychosocial intervention which addresses many of the barriers to adherence by using an empathic approach to help people establish the costs and benefits of their behaviour (Corrigan, 2002). The approach was originally developed for substance misuse patients (Miller & Rollnick, 1991) but has since been applied to other mental health populations. There is also evidence that this technique can be successfully used with psychotic patients, by making appropriate adjustments such as breaking the task down into small concrete steps. Bellack and DiClemente (1999) state that by doing so people with cognitive deficits can still understand and benefit from MI. Other research states that cost benefit analysis involved in MI can lead to significant improvement in psychotic symptoms such as delusions and hallucinations (Drury *et al*., 1996).

The Transtheoretical Model or Stages of Change model (Prochaska & DiClemente, 1986) attempts to assess an individual's readiness or motivation for change, and by doing so, any intervention can subsequently be tailored to match this stage. Research using this model has been conducted on the process of change in psychotherapy in the field of substance abuse, criminality and high risk health behaviours. The basic premise is that individuals vary in their readiness for change and therefore different therapeutic approaches should be used depending on their stage of change. The five stages which have been identified are precontemplation, contemplation, preparation/determination, action and maintenance. The first stage called precontemplation is where the individual does not accept they have a problem and therefore is not considering change. In the next stage of contemplation the individual is ambivalent about change, and although accepting there is a problem may not be able to change or be unwilling to do so. The

preparation/determination stage is where the individual may have commenced making some small changes in behaviour. The action stage is where the individual has committed to change, and as a result will typically engage in some form of therapy. The final stage called maintenance is where the individual attempts to maintain any changes made, and prevent any potential future relapse. As a result this model highlights the importance of addressing treatment motivation or readiness, and the role it plays in enhancing treatment responsivity.

Motivation can be viewed in two ways by comparing intrinsic versus extrinsic motivation. Intrinsic motivation describes an individual's desire to participate in an activity which they view as interesting and relevant. In comparison extrinsic motivation can occur when a concrete outcome is achieved such as money or a reward (Medalia & Choi, 2009). Numerous studies have demonstrated that intrinsic motivation is linked to better engagement in surroundings, improved self-esteem and sense of well-being, better learning and creativity and greater persistence in performance (Deci & Ryan, 2008; Vansteenkiste *et al.*, 2004). Extrinsic motivators can reduce the level of learning that occurs and it is recommended they are used with caution (Elliot & Dweck, 2005).

A study involving community-based participants attending a cognitive remediation programme, separated them into high and low intrinsic motivation based on frequent, voluntary attendance. Those with high intrinsic motivation produced a large effect size when measured on processing speed as an outcome measure. This was in comparison to the low intrinsically motivated participants who produced a very small effect size on the outcome measure (Choi & Medalia, 2005). However, this study involved a psychiatric sample with mixed diagnoses and consisted of only 48 patients, therefore is it questionable how possible it is to extrapolate these findings.

A more recent study by Nakagami *et al.,* (2008) investigated the relationship between intrinsic motivation, psychosocial functioning and neurocognition in 120 patients with schizophrenia participating in outpatient psychosocial rehabilitation. This study highlighted the presence of impairments in neurocognition, motivation and psychosocial

functioning in schizophrenia, and aimed to assess how these factors are related. The results indicated a strong mediating role of intrinsic motivation in the relationship between psychosocial functioning and neurocognition. This suggests that intrinsic motivation is crucial in determining the relationship between functional change and neurocognition in schizophrenia. They also found that neurocognition had no effect on the relationship between psychosocial functioning and intrinsic motivation. These results indicate that the relationship between psychosocial functioning and neurocognition in schizophrenia can be explained by intrinsic motivation. As such the authors conclude that intrinsic motivation should be considered a viable treatment target, and treatment should be geared towards enhancing intrinsic motivation in order to maximize functional outcomes.

If one accepts the importance of intrinsic motivation in learning, it is then necessary to consider the factors that influence motivation. Schizophrenia itself as a disorder involves reduced motivation, a symptom known as avolition which is targeted by treatment such as medication (Medalia & Choi, 2009). Factors which have been identified as affecting intrinsic motivation are interpersonal relationships, instructional techniques and learning environment. The importance of interpersonal relationships is demonstrated through the teacher/student relationship which has been shown to influence learning (Schunk & Pajares, 2005). A controlling environment where incentives are used and people feel pressured to meet deadlines, combined with an authoritarian approach reduces motivation, self-determination and sense of autonomy (Ryan & Deci, 2000). Other research has also found reduced learning and persistence in learning, along with higher passivity in a controlling environment. In comparison, an environment which avoids controlling language, reduces the use of incentives and promotes the learner's individuality, is more likely to result in improved test performance, intrinsic motivation, learning and sense of well-being (Vansteenkiste *et al.*, 2004).

Recent research indicates that an environment which supports autonomy enhances intrinsic motivation meaning that schizophrenic patients have some control over their learning, the value of it is evident to them and they have the opportunity to demonstrate

their competency (Choi & Medalia, 2009). These are important factors to consider when treating mentally disordered offenders who are incarcerated against their will.

It has been proposed that low engagement in offender treatment programmes is common (McMurran, 2002). In considering treatment with offenders it is argued that motivation relates to goal-seeking factors, and responsivity is a trait of treatment programmes as opposed to the individual. For this reason the term readiness is suggested as being more inclusive as it considers both individual characteristics and environmental situations which may facilitate therapeutic change (Howells & Day, 2007). This is the basis behind the Multifactor Offender Readiness Model (Ward *et al.*, 2004) which proposes that readiness is an interaction between individual and external factors. The model states that the individual's environment may influence their mood and beliefs, for example being placed in a maximum secure setting may make an individual feel depressed and believe that they are dangerous. It also recognises that engagement is necessary but not sufficient for effective clinical change during treatment. Internal factors can be split into cognitive, affective, volitional, behavioural and identity factors. Cognitive factors that may occur are if for example the individual may have previous negative experiences of treatment, and therefore have negative expectations of their ability to benefit from treatment (Howells & Day, 2007). Beliefs regarding self-efficacy e.g. I can get better, and the costs versus benefits of treatment are also important factors.

In relation to affective factors it is suggested that readiness is influenced by the capacity to access and experience emotions, the ability to express emotions and the ability to reflect on them. An inability to do so is likely to impede treatment programmes where exploration of emotions and their impact on offending behaviour is required (Howells, Day & Wright, 2004). It also seems likely that very high or low emotional states will reduce readiness for treatment, for example a person with severe depression is less likely to be ready to engage in treatment that someone with moderate depression (Howells & Day, 2007).

Behavioural factors that may influence readiness for treatment are the ability to seek help when required, to develop relationships with others and navigate basic social situations such as discussion of thoughts and feelings. Volitional or motivational factors are understood in terms of goals i.e. if the goals of the offender match those of the treatment programme then they will be ready to engage in treatment. Finally identity factors are important in readiness for treatment as their identity must be amenable to change as necessitated by the programme of treatment (Ward *et al*., 2004). This means the person's values and beliefs must change from perceiving themselves for example as a criminal to a person with a mental health difficulty.

1.7 Measuring Treatment Gain

The issue of how to measure treatment gain has been discussed by Jacobson and Truax (1991), who state that the effects of treatment are typically measured by comparison of means using statistical tests. However, they note that using statistical tests is limited as they do not reveal any information on the variability of response within treatment which is very important for clinicians to know. Even if a statistically significant effect is found this not does tell the clinician anything of the clinical significance of the finding. Clinicians wish to know about the efficacy of psychotherapy and the impact on patients, if they have received benefit from it or if it has made a difference to their lives. These are questions which statistical comparisons can not answer in any great depth, particularly on an individual basis.

The effect size statistic which is used in meta-analysis and measures the size of the treatment effect is more informative than standard statistical tests, yet is subject to the same criticisms discussed previously in regard to standard statistical tests. The clinical significance of an effect can be viewed as meeting the standards set by clinicians, researchers and the patient themselves (Jacobson & Truax, 1991). However, there is no consensus regarding what these standards should be and several suggestions have been made. Wolf (1978) proposes that there should be a level of change that it recognisable by significant others, whilst Kazdin and Wilson (1978) state there should be an

elimination of the presenting problem. Other suggestions are that there should be normative or high end-state functioning by the end of therapy, or changes that significantly reduce the risk for many health problems (Nietzel & Trull, 1988; Mavissakalian, 1986).

Jacobson and Truax (1991) proposed their reliable change index as a method of determining clinically significant change, which compares functional and dysfunctional distributions. However, using this approach appeared to result in weaker significance levels when data that had been significant using statistical techniques were reanalysed. This has also been found in other research using similar methods for determining clinical significance rather than statistical tests (Robinson *et al.*, 1990). It has also been noted that attempting to operationalise clinical significance in terms of a return to normal functioning may not be appropriate in disorders such as schizophrenia. Recovering to pre-morbid functioning is something that is arguably unachievable in such disorders, and a standard that most would not expect from treatment. A further issue in determining clinical significance is the use of reliable and valid psychometrics which yield norms for functional and dysfunctional distributions. Without normative data standardised cut off points can not be established and used in establishing clinical significance. Jacobson and Truax (1991) conclude that the optimal method for determining clinical significance is yet to be agreed.

Regarding what should be measured in treatment, factors such as knowledge of programme content, patient confidence, individual and group disclosure, insight, attendance, participation, generalisation of skills to real life, skills acquisition, and performance and therapeutic alliance are all important for staff to measure (Kennedy, 1999). However, the relevance of responsivity factors on treatment of offenders can only truly be measured by analysis of recidivism rates. If offenders who demonstrate good treatment responsivity have reduced recidivism rates, then their treatment responsivity has extended beyond the actual period of treatment.

1.8 The Relevance Of Assessing Cognitive Impairment And Treatment Responsivity

Intellectual functioning can be regarded as an important consideration when assessing treatment responsivity. Fabiano, Porporino, and Robinson (1991) highlight that cognitive skills programmes are more effective with offenders of average to high-average intelligence, than those with below average intelligence. This being the case it therefore seems extremely pertinent to be aware of an individual's cognitive abilities when determining the most appropriate treatment option. Furthermore, if we accept that cognitive impairment impacts on a person's response to treatment, which has a subsequent impact on recidivism, it is crucial that we address both their cognitive impairment and their treatment responsivity. Managing the risk of reoffending in mentally disordered offenders is an integral part of the rehabilitation process, and is achieved through factors such as treatment, monitoring and supervision. Therefore, an individual's response to treatment is crucially important in order to reduce the probability of reoffending, and successfully rehabilitate offenders (Kennedy, 2000).

1.8.1 Treatment Responsivity and Risk Management

By matching offenders to the most appropriate treatment, therapists to offenders and group treatments to therapists skilled in their delivery, the effectiveness of treatment may be enhanced. These principles of treatment responsivity should be an integral part of a comprehensive risk assessment and management plan. It is argued that failure to include assessment of treatment responsivity, may result in wasting resources and undermining any potential treatment gains as well as potentially reducing public safety (Kennedy, 2000). If responsivity is successfully assessed this will allow more effective treatments to be developed for offenders.

The relevance of cognitive impairment in risk assessment is highlighted by the fact that it is being considered for inclusion in the revised edition of the HCR-20, which is commonly considered as the benchmark in violence risk assessment (Douglas, 2008). Treatability as a risk item has also been included in the Short Term Assessment of Risk

and Treatability (START, Webster *et al*; 2006) indicating growing awareness of the importance of assessing factors such as treatment readiness, responsivity and gain. Furthermore, if we accept that cognitive impairment is a dynamic risk variable this means that it should be amenable to change as stated by Fishbein *et al.,* (2006). This would concur with the fact that it has been identified as a treatment target by two National Institute for Mental Health initiatives as stated previously.

1.8.2 Cognitive Remediation

The importance of cognitive impairment in schizophrenia is highlighted by the fact that it can predict if a person will be able to meet their treatment goals. This has consistently been demonstrated through the link between cognitive impairment and poor problem solving skills and inability to benefit from rehabilitation services in schizophrenia (Green *et al*., 2004). Treatment options include groups such as psychosocial training which aim to teach people life skills such as social interaction, problem solving and relapse prevention. However, a person with severe attention difficulties or memory problems may be unable to benefit from this, as they are unable to attend to the information and/or can not remember it. Poor working memory may also mean difficulty following conversations and remembering questions just asked, and impaired processing speed may mean others in a group setting respond faster resulting in the individual being perceived as not fully engaging. Due to the increasing awareness of such problems behavioural programmes are being developed in an attempt to address these deficits. These programmes are based on the research evidence which indicates that people with schizophrenia can learn new skills and that cognitive deficits can therefore be changed (Medalia & Choi, 2009). There are various names for such programmes ranging from cognitive remediation to rehabilitation to training. However, as it is unlikely that full premorbid ability will be restored it has been suggested that the most appropriate term may be cognitive training (Tomas *et al*., 2010). It may be helpful to view cognitive remediation as a method of teaching people how to pay attention, problem solve, improve memory and information processing speed (Medalia & Choi, 2009). It is an evidence based strategy consisting of compensatory interventions or cognitive drills

aimed at improving neuropsychological functioning. By improving executive functioning, memory and attention the individual should also have improved psychosocial functioning, and be better equipped to deal with daily living. There are several methods of cognitive remediation ranging from group to individual programmes, and computerised or paper and pencil programmes.

A recent review in the area of cognitive remediation in schizophrenia, highlights six meta-analyses reporting moderate effect sizes on cognitive performance and daily functioning following remediation programmes (Medalia & Choi, 2009). These results appear to indicate the potential benefits of cognitive remediation, and reinforce the possible improvements that can be made not only in cognitive deficits but also daily functioning. However, this study did not comment on the impact of cognitive remediation on symptoms of schizophrenia, which has been addressed in a meta-analysis of 26 randomised controlled trials involving 1151 patients. This study by McGurk *et al*., (2007) analysed the impact of cognitive remediation programmes on cognitive performance, psychosocial functioning and symptoms of schizophrenia. The results indicated a medium effect size for cognitive performance and slightly smaller effect size for psychosocial functioning, and a small effect size for symptoms. The study also noted that improvements in psychosocial functioning were greatest when cognitive remediation programmes were combined with psychiatric rehabilitation.

1.9 Summary of cognitive impairment and treatment responsivity information

From the research discussed there appears to be clear evidence of the existence of cognitive impairment in schizophrenia (e.g. Gold, 2004). This has significant implications for an individual's response to treatment, along with the many other identified factors that can influence treatment responsivity. Given the high incidence of schizophrenia amongst MDO's, it follows that there is a high level of cognitive impairment in this population. However, in reviewing the research there appears to be a lack of studies regarding the impact of cognitive impairment on treatment gain and adherence in mentally disordered offenders. This exploratory study aims to address this

gap in the literature. The research rationale for the current study, aims, research hypotheses, and research questions have been developed from the findings of the literature reviewed above. This information is presented in the following Chapter 2.

2 THE THESIS RESEARCH HYPOTHESES AND QUESTIONS

Research to date has examined the relationship between cognitive functioning and treatment responsivity in a prison population (Fishbein *et al*., 2006). However, the author is not aware of any studies that have investigated the impact of cognitive impairment on response to treatment in mentally disordered offenders.

This study aims to identify relevant neuropsychological profiles that have an impact upon an individuals' response to treatment specifically in mentally disordered offenders. By investigating this issue, the importance of establishing levels of cognitive impairment and incorporating this into treatment delivery can become a more standard approach in the treatment of mentally disordered offenders. The findings from this study would appear to be extremely important in considering the relevance of this information for risk management. More specifically the relevance and need for cognitive remediation programmes may be highlighted as a first step prior to delivering psychological interventions. A quantitative research approach was used to investigate the impact of cognitive functioning (IQ, memory executive functioning, and attention) on treatment gain (measured by difference in pre and post treatment scores on relevant psychometric measures).

The research question, from which the research hypotheses were developed, was:
What impact does cognitive impairment have on response to treatment in mentally disordered offenders in maximum secure psychiatric care? Based on this research question and in relation to relevant research the following research hypotheses were generated:

Hypothesis 1:

Research hypothesis: There will be a significant positive association between memory functioning as measured by the Wechsler Memory Scale Third Edition (WMS-III, Wechsler, 1997), and treatment gain as measured by pre and post treatment scores.

Null Hypothesis: There will be no relationship between memory functioning as measured by the Wechsler Memory Scale Third Edition (WMS-III, Wechsler, 1997), and treatment gain as measured by pre and post treatment scores.

Hypothesis 2

Research hypothesis: There will be a significant positive association between attention functioning as measured by the Test of Variables of Attention (TOVA, Greenberg & Waldman, 1993), and treatment gain as measured by pre and post treatment scores.

Null Hypothesis: There will be no relationship between attention functioning as measured by the Test of Variables of Attention (TOVA, Greenberg & Waldman, 1993), and treatment gain as measured by pre and post treatment scores.

Hypothesis 3

Research hypothesis: There will be a significant positive association between executive functioning as measured by the Cambridge Automated Neuropsychological Test Automated Battery (CANTAB, Sahakian *et al*., 1988), and the Speed and Capacity of Language Processing Test (SCOLP, Baddeley, Emslie & Nimmo-Smith, 1992), and treatment gain as measured by pre and post treatment scores.

Null Hypothesis: There will be no relationship between executive functioning as measured by the Cambridge Automated Neuropsychological Test Automated Battery (CANTAB, Sahakian *et al*., 1988), and the Speed and Capacity of Language Processing Test (SCOLP, Baddeley, Emslie & Nimmo-Smith, 1992), and treatment gain as measured by pre and post treatment scores.

Hypothesis 4

Research hypothesis: There will be a significant positive association between IQ as measured by the Wechsler Adult Intelligence Scale Third Edition (WAIS-III, Wechsler, 1997), and treatment gain as measured by pre and post treatment scores.

Null Hypothesis: There will be no relationship between IQ as measured by the Wechsler Adult Intelligence Scale Third Edition (WAIS-III, Wechsler, 1997), and treatment gain as measured by pre and post treatment scores.

2.1 Exploratory Questions

The following exploratory questions were also considered in relation to the research findings:

i) Are some forms of cognitive impairment more predictive than others in determining response to treatment?

ii) Is there a difference between the type of group treatment and the consequent impact on a patient's response?

iii) Is there a difference between schizophrenia or other diagnoses in regards to cognitive impairment and response to treatment?

iv) Does age have an impact on cognitive impairment and response to treatment when considered as a predictive factor?

3 METHODOLOGY

3.1 Design

This exploratory study utilised a cohort quantitative research design to investigate the research hypotheses and research questions. The data were obtained via the administration of neuropsychological assessments and self-report measures. All hypotheses were tested using a correlational design followed by regression analysis. This was to determine if there is an association between pre- and post-treatment scores and participants' cognitive scores. The dependent variables were the participants' treatment gain scores (measured by the difference between pre-and post-treatment scores). The independent variables were the participants' memory, IQ, executive functioning and attention scores. The other research questions (refer to chapter 2, section 2.1) were explored through a combination of correlational and between-participants designs. The design was dependent on the type of data (e.g. continuous, categorical) that was being analysed.

3.2 Power analysis

The study involved the analysis of existing data collected from a neuropsychological study using a cohort design, where all patients within the hospital in this study were asked to participate in a research study. During a one year period all patients resident in, or admitted, to the hospital were offered the chance to participate in the study. Newly admitted patients were approached whilst on the admissions ward while continuing care patients were identified and the order in which they were approached randomised. These data have been compared with data collected from the administration of pre- and post-group psychometrics, as part of routine service evaluation of psychological group therapies in the Psychological Therapies Service (PTS) in the hospital. Other relevant data on cognitive functioning collected from the WAIS/WMS writer (computer software package for scoring the WAIS and WMS cognitive assessments) was included, in order to establish the maximum sample size and allow more robust statistical analysis to be performed. Therefore, as the study involved a pre defined cohort and no further direct patient contact was required for this study a power analysis was not necessary.

3.3 Participants

This study involved the use of existing data meaning that no new participants were recruited. The data being used for this study was collected from participants who were approached when they were inpatients at the hospital in this study during the period of the study. The patients who participated in the neuropsychological study and had also completed group psychological therapy were then matched. This resulted in five separate groups of various sizes as follows:-

Group 1 - Drug and Alcohol Education Group, N = 83 participants
Group 2 - Drug and Alcohol Relapse Prevention Group, N = 61 participants
Group 3 - Social Problem Solving Group, N = 49 participants
Group 4 - Anger Management Group, N = 44 participants
Group 5 - Coping with Mental Illness Group, N = 66 participants

* There are other psychological groups within the PTS service but due to low numbers and lack of data it was not possible to include them

The predictor variables for the study were:- executive functioning, attention, memory and IQ score. This is based on previous research by Fishbein *et al.,* (2006) who looked at the ability of neuropsychological constructs to predict treatment response in a prison population.

3.4 Procedure

As stated previously the neuropsychological data being used for this study was collected as part of an original research study, and the following criteria were applied for the neuropsychological study:-

Inclusion Criteria:-

- Inpatient at the hospital in this study
- Responsible Medical Officer (RMO) consent confirming the patient was capable of giving informed consent
- Patient consent to participate in study

Exclusion Criteria:-

- Individuals who were unable to give informed consent according to their RMO
- Individuals who do not consent to participation in study

Individuals who participated in the neuropsychological research study were matched to their corresponding psychological therapies service data and results compared accordingly.

3.5 Participant confidentiality

The completed questionnaires and the consent forms from the neuropsychological study were kept in a locked filing cabinet in the Psychology Department of the hospital. The service evaluation data collected from the Psychological Therapies Service and the data collected from the WAIS/WMS Writer was collated into a database. Once the data collation was completed no identifying information was included in the electronic database.

3.6 Ethical issues

Mentally disordered offenders are a potentially vulnerable group due to the severe and enduring nature of conditions such as schizophrenia, and the fact that they are incarcerated against their will due to their offending behaviour. Ethical issues, in line with British Psychological Society Code of Ethics and Conduct (British Psychological Society, 2009) were adhered to throughout the neuropsychological study in order to reduce potential burden to the participants. Participants were informed that they had the right to withdraw from the research at any stage after giving consent. Furthermore, the inclusion and exclusion criteria were designed to ensure that the Responsible Medical Officer (RMO) for each patient was initially approached, to decide if they thought the patient was capable of giving informed consent to participate in the neuropsychological research.

If a participant became upset during the study the researcher would refer them to their keyworker or RMO. Participants were also aware that they could contact the researcher via a member of nursing staff in case they wished to discuss any aspect of the study, prior to or following completion of the neuropsychological assessments.

3.7 Ethical approval

The South East Scotland Research Ethics Service reviewed the research proposal and determined that the study did not require ethical approval under NHS research governance arrangements (see Appendix 1). Approval was granted from the University of Edinburgh Clinical Psychology Ethics Committee (see Appendix 2) and the State Hospital Research Committee (see Appendix 3).

3.8 Measures

The participants who took part the neuropsychological research study completed the following neuropsychological assessments:-

Wechsler Adult Intelligence Scale Third Edition (WAIS-III, Wechsler, 1997)

This measure aims to assess the intellectual capacity of adults aged 16-89 (Wechsler, 1997). The measure contains the traditional three composite IQ scores of Verbal, Performance and Full Scale along with four Index Scores; Verbal Comprehension, Perceptual Organisation, Working Memory and Processing Speed. There are also scaled scores for each subtest that constitutes the Index Scores, such as Vocabulary and Arithmetic.

Wechsler Memory Scale - Third Edition (WMS-III, Wechsler, 1997)

This measure assesses the learning and memory functioning of adults aged 16-89 (Wechsler, 1997). The scale comprises six subtests looking at Auditory and Visual Immediate Memory; Auditory, Visual and Auditory Recognition Delayed Memory and finally Working Memory. As with the WAIS the WMS also produces scaled scores for

each subtest such as 'Logical Memory' and 'Faces Recognition'. The reliability and validity of both the WAIS-III and WMS-III have been found to be very high, and this is evidenced by consistent scores across populations such as brain injury and Alzheimer's disease (Wechsler, 1997).

Cambridge Automated Neuropsychological Test Automated Battery (CANTAB) (Sahakian *et al.*, 1988)

This measure assesses neuropsychological functioning by measuring memory and learning, attention and executive functioning, and is administered via a computer programme. There are numerous subtests in the battery and as such, for the purposes of this study, the following subtests were selected as they measured executive functioning and attention:-

- Rapid Visual Information Processing (RVIP) – a test of sustained attention
- Stockings of Cambridge Task (SOC) – a spatial planning test
- Big/Little Circle (BLC) – tests comprehension, learning and reversal of a rule
- Intra-Extra Dimensional Set Shift Test (IED) - assesses visual discrimination and attentional set formation as well as maintenance, shifting and flexibility of attention.

The test-retest reliability of the CANTAB is satisfactory with some subtests having correlations of over 0.9. It has been shown to be a valid measure in numerous patient populations and is used in at least 50 different countries (Cambridge Cognition, 2011).

Speed and Capacity of Language Processing Test (SCOLP) (Baddeley, Emslie & Nimmo-Smith, 1992)

This measure assesses the speed of information processing to allow identification of cognitive slowing in brain damaged patients, and is therefore a measure of executive functioning. It consists of two measures, the Spot the Word Test (SWT) and the Speed

of Comprehension Test (SCT). Reliability has been calculated as 0.88 on a sample of 224, and validity has been established as good and the test is quickly and easily administered (http://www.psychcorp.co.uk).

Test of Variables of Attention Continuous Performance Test (TOVA) (Greenberg & Waldman, 1993)

This test is a version of a continuous performance task and measures sustained and selective attention via a computer "game". The tests produces scores on response time, response time variability, commission (impulsivity/disinhibition) errors and omission (inattention) errors. Administration takes 21.6 minutes and involves measuring responses to either auditory or visual stimuli. It is both reliable and valid and is used as part of the assessment process for attention deficit disorders. The sensitivity and specificity of the measure have been reported as 0.80 for both (T.O.V.A Clinical manual, 2007).

3.9 Psychological Therapies Service Measures

As there is a significant amount of data generated from each of the psychological therapy groups assessed in this study, in order to minimise the number of variables, an exploratory analysis was conducted to determine the optimum measure for each of the groups should more than one be available. On the basis of this the following measures were selected as they demonstrated significant change both in this study and in previous research within the hospital. These measures were administered pre and post treatment for each of the groups, and information on the measures as well as background information on the groups is now described. In order to facilitate reading and understanding of the results they will be presented in individual chapters following a description of each of the groups. Prior to this however, a brief over view of the data set and how statistical analyses were conducted will be described in chapter 4.

4 RESULTS

4.1 Overview

The data were analysed using the Statistical Package for Social Sciences (SPSS)/ Predictive Analytics SoftWare (PASW) Version 18.0 for Windows. The stages of analyses were as follows:

i) Characteristics of each group were explored using univariate and bivariate statistical tests.

ii) Relationships between treatment outcome scores were explored with cognitive-related variables.

iii) The contribution of relevant predictor variables on participants' treatment outcome scores were explored.

The strategy of analyses and the results for each stage is provided below.

4.2 Strategy of analysis

Statistical tests were selected based on the type of data being analysed. Tests of normality of distribution and homogeneity of variance were used to evaluate the data against assumptions for parametric tests (Dancey & Reidy, 2004). The Shapiro-Wilk test was used to determine if the distribution of scores differed significantly from normality as the group sizes were under fifty in all but two of the groups. The Kolmogorov-Smirnov test was used for the two groups that were larger than fifty. When the data did not adhere to the assumptions of parametric tests, transformation was used to make the data normally distributed. As the data consisted of zero and minus values in order to perform the transformation the zero and minus values had to be removed. An arbitrary value of 100 was therefore added to all the data points and this therefore allowed transformation of the data to occur. If the data were still not normally distributed following transformation, the non parametric equivalent tests were used.

4.3 Results: The sample characteristics

The data were collected from a total of 114 participants all of whom were male. Some participants engaged in more than one group treatment resulting in the group sizes outlined in section 3.3. However, although this data should have been available not all data sets were complete meaning that the group sizes were reduced in the final analysis. Information on diagnoses was also not available for all participants as some had not been formally diagnosed at the time of assessment, and ethical approval had not been obtained to access patient files for this information. Demographic and clinical variables for the participants are summarised in the following tables:-

Table 4.1 *Summary of participant demographic and clinical variables*

	Mean	**Standard Deviation**	**Range**
Age (years)	37.91	10.37	20-67 years

Table 4.2 *Summary of Diagnosis Information for participants*

Primary Diagnosis	**Number of participants**	**Percentage %**
Schizophrenia or other psychotic disorder	89	78
Multiple Diagnoses which include Personality Disorder	27	23.68

Correlational analyses were conducted to assess which cognitive predictor variables were significantly related to age. This series of analysis was in relation to the research question does age have an impact on cognitive impairment and response to treatment when considered as a predictive factor? No significant relationships were found and therefore a regression analysis was not conducted.

4.4 Strategy of analysis: The Preliminary analysis

To investigate the relationship between treatment gain scores and cognitive results, univariate and bivariate statistical tests were carried out.

4.5 Primary analysis: Strategy of analysis

To identify variables that significantly influence participants' treatment gain scores multiple regression analyses were conducted. This statistical test was chosen as the dependent variable (participants' treatment gain scores) was a continuous variable. Multiple regression is a common method for modelling relationships between a DV and multiple IVs.

Separate regression models were run for each of the dependent variables (DVs) in each of the groups described in section 3.3. Predictor variables (PVs) were included if they were significantly associated with the DV as demonstrated in the preliminary analyses. When more than one PV was significantly related to the DV the analysis was run with the inclusion of all relevant predictor variables. The simultaneous or 'enter' method in SPSS was used for the regression analysis where the author specified the predictor variables in each model. This was due to the relatively low numbers involved in each group, as statistical procedures such as stepwise regression should be used with caution and when there is a large sample size (Brace *et al*., 2006). As a result, where possible dependent on factors such as collinearity, variables were grouped together in models based on if they measured the same cognitive domain e.g. attention.

There are several statistical assumptions associated with multiple regression analyses (Dancey & Reidy, 2004). These will now be discussed along with information outlining how they were assessed and if they were violated:-

Assumption 1**:** Sufficient participants are required

How assessed: The groups varied in size and therefore the number of predictor variables entered into the regression model was dependent on this. However, as a general rule 15 participants were required per predictor variable and this was adhered to throughout the analysis. This was based on the following information:- there are several methods for determining the number of participants required in a regression analysis, and Cohen (1992) states that in order to achieve a medium effect size, (at a significance level of 0.05), with five predictor variables, a sample of 91 participants is required. Harris (1985) proposed the following equation to calculate the recommended sample size for a regression analysis: $N \geq 50 + m$ (m= the number of predictor variables). There are five predictor variables in the present study; therefore, based on Harris' equation, a total of 55 participants would be required. Brace *et al*., (2006) state that the minimum should be five times as many participants as predictor variables, but a better ratio is 10:1. As such, 15 participants were required per predictor variable in this study, and therefore the assumption of sufficient participants was met.

Assumption 2: The criterion variable should be drawn from a normally distributed population of scores.

How assessed: The treatment gain scores (criterion variable) were tested for normal distribution and were this was not met the data were transformed. Following transformation if the data were still not normally distributed non-parametric tests were used i.e. Spearman's Rho.

Assumption 3**:** Variables should be linearly related to the criterion variable

How assessed: Multiple correlations were conducted using either Pearson's or Spearman's Rho depending on whether the data were normally distributed or not. Only variables that were significantly correlated were included in the regression analysis.

Assumption 4: Outliers may need to be eliminated

How assessed: As the group sizes were all less than 100 with the largest being 58 outliers were not removed. This is based on the fact that outliers cannot be deleted simply because they are outliers, and this is particularly important to consider if the sample size is less than 100 (Dancey & Reidy, 2004).

Assumption 5: Multicollinearity

How Assessed: The Tolerance Collinearity statistic was used to assess if the tolerance in the amount of variance in the IV was accounted for by the remaining IVs. Tolerance levels of .10 or less were considered insufficient and the IV was therefore not included in the regression (Cohen *et al.*, 2003). This assumption was not violated.

5 THE DRUG AND ALCOHOL EDUCATION GROUP

The Drug and Alcohol (D&A) Education Group has been developed by the hospital in this study as a psycho-educational group, that focuses on the impact of substance misuse on the individual. The group runs for ten sessions with each session lasting approximately one hour. The following measures are used pre and post treatment as part of the service evaluation process to assess participants' performance in the group:-

The Drug Knowledge Questionnaire (see Appendix 4)

This measure was developed by the hospital in this study and tests the knowledge participants have gained regarding drug misuse. There are 25 items in the measure and the participant is asked to tick true/false following each item. A percentage score is then calculated via a computerised scoring system. The higher the percentage score the better indicating improved knowledge.

The Alcohol Knowledge Questionnaire (see Appendix 5)

This measure was also developed by the hospital in this study, and tests the knowledge participants have gained regarding alcohol misuse. There are 25 items in the measure and the participant is asked to tick true/false following each item. A percentage score is then calculated via a computerised scoring system and the higher the percentage score the better as this indicates increased knowledge. Although both measures have not been formally tested for reliability and validity, previous research within the hospital using these measures has demonstrated significant findings. Table 5.0 provides some of the descriptive statistics for this group:-

Table 5.0 *Summary of descriptive statistics for the Drug Knowledge Questionnaire and Alcohol Knowledge Questionnaire*

	Alcohol Knowledge Questionnaire	**Drug Knowledge Questionnaire**
Number completed (N)	N = 58	N = 58
Mean treatment gain score	1.96	1.97
Standard Deviation	0.06	0.04

As this data was not normally distributed Spearman's Rho correlations were conducted to determine which cognitive variables were significantly related to the treatment gain scores. This was as part of an exploratory analysis and the significant results are summarised in Table 5.1.

Table 5.1 *Summary of significant predictor variables for treatment gain scores from Alcohol Knowledge Questionnaire and Drug Knowledge Questionnaire*

Cognitive Predictor variables	**Alcohol Knowledge Questionnaire Correlation**	**Drug Knowledge Questionnaire Correlation**
FSIQ (Full Scale IQ)	NS	0.04
General Memory Index Score	NS	0.02
Inattention Response Time percentile	NS	0.02
Inattention Response Time t score	NS	0.02
Faces Recognition I Scaled Score	0.04	NS
Auditory Recognition Delayed Index Score	NS	0.01

Correlations are significant at the 0.05 level (2-tailed).

NS = Not significant (only significant results are included)

5.1 Multiple regression : Drug and Alcohol Education Group

Table 5.2 provides a summary of the results from multiple regression analysis which was used to assess the contribution of the cognitive factors identified above in relation to participants' treatment gain scores on the Drug Knowledge Questionnaire.

Table 5.2 *Summary of results from multiple regression on Drug Knowledge Questionnaire*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 - Inattention Response Time change t score	.001	.001	.224	.030	.016
Full Scale IQ	.001	.001		.174	
Model 2 - Auditory Recognition Delayed Index	.001	.001	.138	.10	.024
General Memory Index	7.5	.001		.919	

Each PV was entered in the models described above

Table 5.2 illustrates that when the PV's in model 1 were entered into the regression a significant result was established as p = .016. This result indicates that the Inattention t score and Full scale IQ score together predict treatment gain scores on the Drug Knowledge Questionnaire. Furthermore, the Inattention predictor variable alone was predictive of treatment gain scores (p=.030).

Similarly when the PV's in model 2 were entered a significant result was achieved as p = .024. This model indicates that the Auditory Recognition Delayed Index and General Memory Index together predict treatment gain scores on the Drug Knowledge Questionnaire. However, these predictor variables alone did not predict treatment gain scores.

As detailed in Table 5.1 there was one significantly correlated variable with the Alcohol Knowledge Questionnaire. This was entered into a linear regression and the results are shown in the Table 5.3.

Table 5.3 *Summary of results from linear regression on Alcohol Knowledge Questionnaire*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Faces I Recognition Scaled Score	-.007	.006	.015	.232	.232

Table 5.3 indicates that the PV Faces I Recognition Scaled Score is not significant (p = .232) and is therefore not predictive of treatment gain scores on the Alcohol Knowledge Questionnaire.

5.2 Summary and Discussion of Findings

The above results indicate that aspects of memory (General Memory Index and Auditory Recognition Delayed Index), along with attention and IQ are significant in predicting treatment gain scores in the Drug and Alcohol Education Group. This means that as scores improved on cognitive variables so too did treatment gain scores, for example, better memory scores resulted in higher treatment gain scores. This is true for the Drug Knowledge Questionnaire but not the Alcohol Knowledge Questionnaire, as it did not reveal significant results. However, IQ and memory predictor variables were not significant individually and only proved significant when part of a multiple regression model. Attention was the one variable that did prove significant alone. As this is a primarily psycho-educational group involving a more didactic teaching/lecture style, this may explain why aspects of memory are predictive of treatment gain scores. Participants are required to retain large amounts of information in a relatively short space of time, and as the group lasts for a shorter duration (10 weeks) than other groups, there may be

less opportunity to practice skills. Similarly, the outcome measures used test participants knowledge of the information received during treatment, requiring the ability to attend to the material being presented in order to later recall it. These findings would be appear to concur with the research cited previously that participants with memory or attention deficits may struggle with a psycho-educational approach (Zygmunt *et al*., 2002). This is an important consideration for this type of group, and it may be that a more interactive behavioural format facilitates enhanced learning.

6 THE DRUG AND ALCOHOL SAYING NO GROUP

The Drug and Alcohol Saying No Group is a relapse prevention group incorporating elements of CBT to identify negative thinking patterns and challenge irrational beliefs. The group is based on the cognitive-behavioural relapse prevention model proposed by Marlatt and Gordon (1985). The group was adapted from a similar one used in the Scottish Prison Service and made more suitable for a mentally disordered population. It is run over 28 sessions and is held weekly, each session lasting approximately 2.5 hours. The following information describes one of the outcome measures that is used pre and post treatment as part of the service evaluation process to assess participants performance in the group:-

The Drug-Taking Confidence Questionnaire (Annis & Martin, 1985)

The Drug-Taking Confidence Questionnaire (DTCQ) is a 50-item self-report questionnaire designed to measure perceived coping self-efficacy in specific situations, and can be used with any substance that is misused (e.g., cocaine, heroin, alcohol, and cannabis). The individual is asked to rate their confidence in abstaining from their drug of choice in 50 different scenarios, on a six point scale (0, 20, 40, 60, 80, 100) ranging from 0 (no confidence) to 100 (complete confidence). The higher the score the better as this indicates increased confidence in their perceived ability to deal with situations involving drugs. If the individual has more than one drug of choice i.e. polysubstance misuse, they can rate their confidence for both substances. There are eight subscales which measure their confidence in the following areas:- unpleasant emotions (10 items), physical discomfort (5 items), pleasant emotions (5 items), testing personal control (5 items), urges and temptations to use (5 items), conflict with others (10 items), social pressure to use (5 items), and pleasant times with others (5 items). The eight subscales of the DTCQ have demonstrated good reliability (alphas .79 to .95) and validity (Sklar *et al.*, 1997). As the measure is administered via computer it is not possible to provide an example in the appendices.

6.1 Multiple regression: Drug and Alcohol Saying No Group

Table 6.0 outlines descriptive statistics for the DTCQ measure. The data that is normally distributed contains minus values for mean scores, however this indicates an increase in scores from pre to post treatment, i.e. a positive treatment gain score.

Table 6.0 *Descriptive statistics for the Drug Taking Confidence Questionnaire (DTCQ)*

DTCQ Subscale	**Number completed (N)**	**Mean treatment gain score on DTCQ**	**Standard Deviation**
Unpleasant Emotions	43	1.83	.303
Physical Discomfort	43	1.85	.251
Pleasant Emotions	42	1.86	.192
Testing Control	*44*	*-25.14*	*37.04*
Urge to Use	43	1.80	.296
Conflict	43	1.82	.346
Social Pressure	42	1.79	.371
Pleasant Times	44	1.76	.387
Unpleasant Emotions 2	*21*	*-31.57*	*27.41*
Physical Discomfort 2	*21*	*-25.52*	*27.34*
Pleasant Emotions 2	*21*	*-26.33*	*27.03*
Testing Control 2	*21*	*-25.29*	*24.35*
Urge to Use 2	*23*	*-24.04*	*37.33*
Conflict 2	*21*	*-29.48*	*27.01*
Social Pressure 2	*21*	*-35.86*	*29.29*
Pleasant Times 2	*21*	*-28.62*	*23.79*

Italics indicate data that is normally distributed

The number 2 indicates individuals with poly substance misuse who rated both substances

Tables 6.1 to 6.7 provide a summary of the results from correlations which were conducted to assess the contribution of cognitive factors in relation to participants' treatment gain scores on the Drug Taking Confidence Questionnaire (DTCQ). Only significant results are reported and any data that was not normally distributed following transformation, the non-parametric equivalent test was used. Correlations were not performed for the second type of drug an individual used as this was not their primary drug of choice, and therefore not the most important substance. The number of individuals with poly substance misuse was also reduced, n = 21 meaning results from such a small sample would not be reliable.

Table 6.1 *Summary of cognitive predictor variables significantly related to the DTCQ Unpleasant Emotions Subscale*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for DTCQ Unpleasant Emotions Subscale**
Verbal Recall I Scaled Score (SS)	.014
Verbal Recall II SS	.027
SCOLP Spot the Word Test (SWT) SS	.019
SCOLP Speed of Comprehension Test (SCT) SS	.034

Correlations are significant at the 0.05 level (2-tailed).

Table 6.2 *Summary of cognitive predictor variables significantly related to the DTCQ Physical Discomfort Subscale*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for DTCQ Physical Discomfort Subscale**
Processing Speed Index	.029
Verbal IQ Actual Difference	.031

Correlations are significant at the 0.05 level (2-tailed).

Table 6.3 *Summary of cognitive predictor variables significantly related to the DTCQ Pleasant Emotions Subscale*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for DTCQ Pleasant Emotions Subscale**
Response Style t score	.016
Response Style Percentile	.008

Correlations are significant at the 0.05 level (2-tailed).

Table 6.4 *Summary of cognitive predictor variables significantly related to the DTCQ Testing Control Subscale*

Cognitive Predictor variables	**Pearson's Correlation Sig for DTCQ Testing Control Subscale**
Picture Arrangement SS	.047
Working Memory Index	.03

Correlations are significant at the 0.05 level (2-tailed).

Table 6.5 *Summary of cognitive predictor variables significantly related to the DTCQ Urge to Use Subscale*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for DTCQ Urge to Use Subscale**
Verbal Recall I SS	.013
Full Scale IQ actual difference	.029

Correlations are significant at the 0.05 level (2-tailed).

Table 6.6 *Summary of cognitive predictor variables significantly related to the DTCQ Social Pressure Subscale*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for DTCQ Social Pressure Subscale**
Inattention Commission t score	.009
Inattention Commission Percentile	.01
Inattention Detectability t score	.025
Inattention Detectability Percentile	.025
Verbal Recall I SS	.047

Correlations are significant at the 0.05 level (2-tailed).

Table 6.7 *Summary of cognitive predictor variables significantly related to the DTCQ Pleasant Times Subscale*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for DTCQ Pleasant Times Subscale**
Inattention Omission t score	.047
Verbal Recall I SS	.034
Immediate Memory Index	.01
SCOLP SCT SS	.026
Attention Deficit Confidence Index	.025
FSIQ actual difference	.046
Inattention variance t score	.025
Inattention variance percentile	.024

Correlations are significant at the 0.05 level (2-tailed).

Following correlational analyses the significantly related variables were entered into a regression model. Tables 6.8 to 6.14 provide a summary of the results from multiple regression analysis which was used to assess the contribution of the predictor variables

i.e. cognitive factors in relation to participants' treatment gain scores on the various subscales of the Drug Taking Confidence Questionnaire:-

Table 6.8 *Summary of results from multiple regression on the Unpleasant Emotions Subscale of the Drug Taking Confidence Questionnaire*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – SCOLP Speed of Comprehension Test SS	-.011	.05	.032	.823	.285
SCOLP Spot the Word Test SS	-.049	.042		.259	
Model 2 –Verbal 1 Recall SS	-.090	.045	.083	.062	.162
Verbal II Recall SS	.042	.034		.233	

Each PV was entered in the models described above

Table 6.8 indicates that none of the predictor variables individually or collectively in model one and two were significant in predicting treatment gain scores on the Unpleasant Emotions subscale of the DTCQ.

Table 6.9 *Summary of results from multiple regression on the Physical Discomfort Subscale of the Drug Taking Confidence Questionnaire*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – Processing Speed Index	-.009	.005	.102	.106	.125
Verbal IQ actual difference	-.003	.005		.466	

Table 6.9 indicates that none of the predictor variables individually or collectively in model one were significant in predicting treatment gain scores on the Physical Discomfort subscale of the DTCQ.

Table 6.10 *Summary of results from multiple regression on the Pleasant Emotions Subscale of the Drug Taking Confidence Questionnaire*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – Response Style t score	-.002	.002	-.003	.122	.343

Table 6.10 indicates that the predictor variable Response Style t score was not a significant variable in predicting treatment gain scores on the Pleasant Emotions subscale of the DTCQ.

Table 6.11 *Summary of results from multiple regression on the Testing Control Subscale of the Drug Taking Confidence Questionnaire*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – Picture Arrange SS	4.698	3.065	.086	.140	.149
Working Memory Index	.803	.985		.424	

Table 6.11 indicates that none of the predictor variables individually or collectively in model one were significant in predicting treatment gain scores on the Testing Control subscale of the DTCQ.

Table 6.12 *Summary of results from multiple regression on the Urge to Use Subscale of the Drug Taking Confidence Questionnaire*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – FSIQ actual difference	-.003	.005	-.030	.572	.510
Verbal I Recall SS	-.015	.024		.546	

Table 6.12 indicates that none of the predictor variables individually or collectively in model one were significant in predicting treatment gain scores on the Urge to Use subscale of the DTCQ.

Table 6.13 *Summary of results from multiple regression on the Social Pressure Subscale of the Drug Taking Confidence Questionnaire*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – Inattention Commission t score	.048	.023	.118	.048	.134
Inattention Detectability t score	-.039	.021		.077	
Model 2 - Verbal I Recall SS	-.043	.032	.035	.199	.199

Table 6.13 indicates that the only significant predictor variable was the Inattention Commission t score. However, when entered into the regression model with another variable the model did not prove significant. Model 2 was also not significant in predicting treatment gain scores on the Social Pressure subscale of the DTCQ.

Table 6.14 *Summary of results from multiple regression on the Pleasant Times Subscale of the Drug Taking Confidence Questionnaire*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – Inattention Omission t score	.002	.003	.085	.440	.167
Verbal I Recall SS	-.051	.035		.160	
Model 2 - Immediate Memory Index	-.006	.007	.001	.418	.382
Inattention Variability t score	.005	.006		.407	
Model 3 - Attention Deficit Confidence Index	.006	.004	.045	.169	.169
Model 4 –SCOLP Speed of Comprehension Test SS	-.065	.024	.230	.014	.032
FSIQ actual difference	.002	.005		.734	

Each PV was entered in the models described above

Table 6.14 indicates that the only significant predictor variable was the SCOLP SCT scaled score (p= .014). When entered into the regression model with another predictor

variable the result was significant (p= .032). The other predictor variables and models were not significant in either individually or collectively predicting treatment gain scores on the Pleasant times subscale of the DTCQ.

6.2 Summary and Discussion of Findings

The above results indicate that aspects of attention and executive functioning were significant at predicting treatment gain scores on the DTCQ. Although several other IQ and memory variables were correlated to DTCQ subscales, they did not prove to be significantly predictive of outcome scores. This means that as inattention levels increased so too did treatment gain scores on the DTCQ which is not the direction of association that may have been expected. However, the relationship was negative for executive functioning meaning that as treatment gain scores increased executive functioning scores decreased. This is a positive result indicating that the less executive functioning difficulties an individual has the more they can benefit from treatment. The DTCQ measure assesses an individual's confidence of abstaining from substances in various different scenarios, and it may be that cognitive skills of attention and planning/processing speed are more relevant in this task. For example, paying attention to the scenario being outlined and planning/imagining how you would react in such a situation, are skills which require attention and executive functioning.

The Drug and Alcohol Saying No group itself is a much longer CBT based group than the Drug and Alcohol Education group, requiring participants to engage in behavioural activities such as role-play and group exercises. It may be that this behavioural component to the group requires skills of attention and executive functioning more than memory and IQ, resulting in these cognitive variables being predictive of treatment gain. This would concur with previous research cited in section 1.5.1 on prison inmates which found executive functioning and emotion regulation were predictive of treatment outcome following a nine month CBT programme (Fishbein *et al.*, 2006). The Saying No group lasts for a similar period of time and is also CBT based.

7 THE COPING WITH MENTAL ILLNESS GROUP

This is a psycho-educational group which aims to teach individuals' who suffer from mental health difficulties about their illness and other related disorders. It was developed by staff within the hospital in this study to assist patients' in understanding their illness and the implications it has for their detention. The content of the programme is based on principles of Psychosocial Intervention (PSI), which is an evidence-based approach for people with schizophrenia. The group is run for 22 sessions each lasting one hour and is split into three modules; foundation, the legal system and coping skills and recovery. The following measures are administered pre and post treatment:-

Forensic Assessment of Knowledge Tool (FAKT) (Walker, Connaughton & Wilson, 2005)

This measure (see Appendix 6) assesses the patient's understanding of their symptoms and management of their illness, as well as legal issues. As it was developed by staff within the hospital in this study it has not been validated, however previous research within the hospital using this measure has demonstrated significant findings. A total score out of a possible 50 is calculated with higher scores indicating greater knowledge.

Understanding of Medication Questionnaire (MacPherson, 1995)

This measure (see Appendix 7) assesses an individual's understanding of their treatment for schizophrenia, why they have been prescribed medication and the effects it can have on them. There are ten items, which are scored 0, 1 or 2 giving a total score out of 35 with high scores indicating greater understanding. Previous research with a schizophrenic population has yielded significant findings using this measure (Macpherson *et al*., 1996). However, there does not appear to be evidence regarding the reliability or validity of the measure.

7.1 Multiple Regression: Coping With Mental Illness (CWMI) Group

Table 7.0 outlines descriptive statistics for the Understanding of Medication and FAKT measures. A minus value for mean score indicates an increase in scores from pre to post treatment, i.e. a positive treatment gain score.

Table 7.0 *Descriptive statistics for the Coping With Mental Illness Group*

	Understanding of Medication Questionnaire	**Forensic Assessment of Knowledge Questionnaire**
Number completed (N)	N = 31	*N = 23*
Mean treatment gain score	-7.68	*1.93*
Standard Deviation	5.87	*0.04*

Italics indicate data that is NOT normally distributed

Tables 7.1 and 7.2 provide a summary of the results from correlations which were conducted to assess the contribution of cognitive factors in relation to participants' treatment gain scores on the Understanding of Medication Questionnaire and the FAKT. Only significant results are reported and any data that were not normally distributed following transformation, the non-parametric equivalent test was used.

Table 7.1 *Summary of cognitive predictor variables significantly related to the Understanding of Medication Questionnaire*

Cognitive Predictor variables	**Pearson's Correlation Sig for Understanding of Medication Questionnaire**
Picture Completion Scaled Score	.03
Attention Deficit Confidence Index	.008

Correlations are significant at the 0.05 level (2-tailed).

Table 7.2 *Summary of cognitive predictor variables significantly related to the Forensic Assessment of Knowledge Tool (FAKT)*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for Forensic Assessment of Knowledge Tool**
Response Style t score	.009
Response Style percentile	.009
Intra-Extra Dimensional Set Shift (IED) total errors SS	.04
Arithmetic SS	.032
Verbal Recall I SS	.011
Verbal Recall II SS	.029

Correlations are significant at the 0.05 level (2-tailed).

Due to the small sample size of the FAKT group it was not possible to conduct multiple regression. As stated previously some data were either missing or incomplete and this resulted in reduced full data sets for this measure. Therefore Table 7.3 demonstrates the results of regression analyses on the Understanding of Medication group:-

Table 7.3 *Summary of results from multiple regression on the Understanding of Medication Questionnaire*

PV	**b**	**SE b**	**Adjusted R Square**	**Sig**	**Model Sig**
Model 1 – Picture Completion SS	-.874	.323	.467	.018	.007
Attention Deficit Confidence Index	-.097	.040		.029	

Table 7.3 indicates that both predictor variables individually and collectively in model one were significant in predicting treatment gain scores on the Understanding of Medication Questionnaire. The overall model was highly significant at p = .007 and the predictor variable Picture Completion Scaled Score was significant at p= .018, along with the Attention Deficit Confidence Index significant at p= .029.

7.2 Summary and Discussion of Findings

The above results indicate that both attention and IQ cognitive variables were significant in predicting treatment outcome scores on the Understanding of Medication questionnaire. However, this was a negative relationship meaning that as treatment gain scores increased attention and IQ scores decreased. This is a similar finding to the Drug and Alcohol Education group as discussed previously, although memory was not found to be a significant predictor variable in the CWMI group. The CWMI group is also primarily psycho-educational and this may be part of the reason for the similar results from the two groups. The fact that memory did not appear to be a significant predictor variable in this group may be related to the small sample size and the fact that as a result of this, regression analysis was only conducted on one measure in comparison to two measures in the Drug and Alcohol Education group.

8 THE SOCIAL PROBLEM SOLVING 'TAKE CONTROL' GROUP

This group was developed by adapting existing problem solving skills programmes and modifying them for a mentally disordered population. The main programme basis came from the Reasoning and Rehabilitation (R&R) programme (Ross *et al.,* 1988), which is one of the most widely delivered CBT programmes for offenders in over 17 countries (Ross, 2004). The aim is to teach not only problem solving and self management, but critical and moral reasoning, creative thinking and social skills training.

There are several measures administered pre and post treatment as part of the service evaluation process, and the following measures were selected for this study:-

Social Problem Solving Inventory (SPSI)(D'zurilla et al., 2002)(see Appendix 8)

This is a 25 item self-report measure which assesses an individual's attitudes towards solving problems and is based on general functioning. The scale measures:-

- Positive problem orientation (how much an individual appraises a problem as a challenge, believes they are solvable and commits to solving them). A high score on this subscale indicates a positive approach to problem solving.
- Negative problem orientation (how much an individual views a problem as a threat to well being, doubts their ability to solve problems and the degree to which they become upset when confronted with a problem). A low score on this subscale indicates the ability to avoid becoming upset by problems.
- Rational problem solving (how much an individual utilises a rational and deliberate effective problem solving strategy when faced with a problem). A high score on this subscale indicates good rational problem solving skills.
- Impulsivity/carelessness style. A low score on this subscale indicates a lack of impulsivity and carelessness in problem solving.
- Avoidance style. A low score on this subscale indicates a lack of avoidance in problem solving.

Raw scores are converted into standard scores for each subscale as well as an overall total score. Internal consistency is strong and stable over time ranging from 0.69 - 0.93, and reliability measurements ranged from 0.72 - 0.84 (D'Zurilla *et al.*, 2002).

The Coping Responses Inventory (Moos, 1993)(see Appendix 9)

This is a self-report measure assessing different types of responses to stressful life circumstances. The scales are divided in to approach coping (problem–focused) and avoidance coping (emotion focused), reflecting cognitive and behavioural efforts to either resolve life stressors or to avoid thinking about them.

This scale measures:

- Logical Analysis: the degree to which an individual cognitively attempts to understand and prepare mentally for a stressor and its consequences (high scores indicate good logical analysis capability)
- Positive Reappraisal: the degree to which an individual cognitively attempts to restructure a problem in a positive way, while still accepting the reality of the situation (high scores indicate increased positive reappraisal)
- Seeking Guidance and Support: the degree to which an individual behaviourally attempts to seek information, guidance and support (high scores are positive indicating increased seeking of guidance and support)
- Problem Solving: the degree to which an individual behaviourally attempts to take action to deal directly with a problem (high scores indicate increased problem solving capabilities)
- Cognitive Avoidance: the degree to which an individual cognitively attempts to avoid thinking realistically about a problem (low scores indicate a lack of cognitive avoidance)
- Acceptance or resignation: the degree to which an individual cognitively attempts to react to the problem by accepting it (low scores indicate a lack of acceptance or resignation)

- Seeking Alternative Rewards: the degree to which an individual behaviourally attempts to get involved in substitute activities and create new sources of satisfaction (low scores indicate a lack of seeking alternative rewards)
- Emotional Discharge: the degree to which an individual behaviourally attempts to reduce tension by expressing negative feelings (low scores indicate a lack of emotional discharge)

Raw scores are converted into T scores for each subscale and there is no total score on this measure. Internal consistency for the eight scales in a male population is moderate ranging from 0.61 to 0.74 (Moos, 1993).

The Barratt Impulsivity Scale(BIS)(Patton et al., 1995)(see Appendix 10)

This is a 30 item self-report scale split into three subscales which measures:-

- Motor Impulsiveness (a high score indicates the individual acts without thinking therefore low scores are better)
- Cognitive Impulsiveness (a high score indicates the individual makes quick cognitive decisions therefore low scores are better)
- Non planning Impulsiveness (a high score indicates the individual is neither concerned about or makes plan for the future, therefore low scores are better)

The three subscales, each containing 10 items, are totaled to give a score for each subscale. Internal consistency ranges from 0.79 to 0.83 for various populations ranging from under-graduates, substance-abuse patients, general psychiatric patients, and prison inmates (Patton *et al*., 1995).

8.1 Multiple Regression: Social Problem Solving 'Take Control' Group

Table 8.0 outlines descriptive statistics for the Coping Responses Inventory. A minus value for mean score indicates an increase in scores from pre to post treatment, i.e. a positive treatment gain score.

Table 8.0 *Descriptive statistics for the Coping Responses Inventory (CRI)*

The Coping Responses Inventory Subscale	**Number completed (N)**	**Mean Treatment Gain Score**	**Standard Deviation**
Logical Analysis	*47*	*2.01*	*.059*
Positive Reappraisal	45	-0.4	4.277
Seeking Guidance and Support	45	-0.76	5.331
Problem Solving	*45*	*2.00*	*.02*
Cognitive Avoidance	45	0.96	4.426
Acceptance or resignation	45	0.38	4.589
Seeking Alternative Rewards	*46*	*2.01*	*0.049*
Emotional Discharge	45	2.0	0.014

Italics indicate data that is NOT normally distributed

Tables 8.1 to 8.5 provide a summary of the results from correlations which were conducted to assess the contribution of cognitive factors in relation to participants' treatment gain scores on the subscales of the Coping Responses Inventory. Only significant results are reported and any data that was not normally distributed following transformation, the non-parametric equivalent test was used.

Table 8.1 *Summary of cognitive predictor variables significantly related to the Logical Analysis Subscale of the Coping Responses Inventory*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for Logical Analysis Subscale**
Logical memory I SS	.001
Logical memory II SS	.001
Immediate Memory Index	.001
General Memory Index	.003
Auditory Immediate Memory Index	.003
Auditory Delayed Memory Index	.008
Family Recall II SS	.013
Visual Delayed Memory Index	.014
Attention Deficit Confidence Index	.025
Visual Immediate Memory Index	.026
Family Recall I SS	.038
FSIQ actual difference	.049
Impulsivity t score	.049

Correlations are significant at the 0.05 level (2-tailed).

Table 8.2 *Summary of cognitive predictor variables significantly related to the Positive Reappraisal Subscale of the Coping Responses Inventory*

Cognitive Predictor variables	**Pearson's Correlation Sig for Positive Reappraisal Subscale**
Logical Memory I Scaled Score	.004

Correlations are significant at the 0.05 level (2-tailed).

Table 8.3 *Summary of cognitive predictor variables significantly related to the Cognitive Avoidance Subscale of the Coping Responses Inventory*

Cognitive Predictor variables	**Pearson's Correlation Sig for Cognitive Avoidance Subscale**
Verbal Recall II Scaled Score	.028
Inattention t score	.026
Response Style t score	.036

Correlations are significant at the 0.05 level (2-tailed).

Table 8.4 *Summary of cognitive predictor variables significantly related to the Seeking Alternative Rewards Subscale of the Coping Responses Inventory*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for Seeking Alternative Rewards Subscale**
Inattention Response Time Standard Error t score	.039
Inattention Response Time Standard Error percentile	.026
Inattention Variability t score	.040
Inattention change t score	.020
Inattention change percentile	.018
Vigilance Response Time block change t score	.019
Vigilance Response Time block change percentile	.019
Vigilance Standard Error block change t score	.002
Vigilance Standard Error block change percentile	.004

Correlations are significant at the 0.05 level (2-tailed).

Table 8.5 *Summary of cognitive predictor variables significantly related to the Emotional Discharge Subscale of the Coping Responses Inventory*

Cognitive Predictor variables	**Pearson's Correlation Sig for Emotional Discharge Subscale**
SCOLP Spot the Word Test Scaled Score	.042

Correlations are significant at the 0.05 level (2-tailed).

Following correlational analysis the significantly related variables were entered into a regression model. Tables 8.6 to 8.10 provide a summary of the results from multiple regression analyses which was used to assess the contribution of the predictor variables i.e. cognitive factors in relation to participants' treatment gain scores on the various subscales of the Coping Response Inventory:-

Table 8.6 *Summary of results from multiple regression on the Logical Analysis Subscale of the Coping Response Inventory*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – Impulsivity t score	.000	.001	.192	.774	.087
Attention Deficit Confidence Index	-.001	.001		.260	
FSIQ actual difference	.003	.002		.051	
Model 2 – Logical Memory Recall I SS	.002	.006	.240	.729	.015
Family Recall I SS	.007	.005		.197	
Logical Memory Recall II SS	.008	.006		.211	
Model 3 – Family Recall II SS	.004	.007	.200	.579	.029
Auditory Immediate Memory Index	.002	.001		.051	
Visual Immediate Memory Index	.001	.001		.570	
Model 4 – Immediate Memory Index	.001	.001	.230	.495	.004
Auditory Delayed Index	.001	.001		.213	
Model 5 – Visual Delayed Index	-.001	.001	.245	.461	.007
General Memory Index	.003	.001		.006	

Each PV was entered in the model described above

Table 8.6 indicates that in Model 1 the predictor variables individually and collectively were not significant in predicting treatment gain scores on the Logical Analysis Subscale of the CRI. In Model 2 the predictor variables individually were not significant but collectively were significantly predictive (p = .015). In Model 3 this was again the case

with the individual predictor variables not producing significant results but the overall model proving significant (p = .029). Model 4 and 5 were again significant in predicting treatment gain scores on the Logical Analysis subscale of the CRI, and the General Memory Index predictor variable in Model 5 was individually significant at p = .006.

Table 8.7 *Summary of results from linear regression on the Positive Reappraisal Subscale of the Coping Response Inventory*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – Logical Memory I SS	.615	.197	.231	.004	.004

Table 8.7 indicates that the predictor variable Logical Memory I Scaled Score is significant in predicting treatment gain scores on the Positive Reappraisal subscale of the CRI.

Table 8.8 *Summary of results from multiple regression on the Cognitive Avoidance Subscale of the Coping Response Inventory*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – Verbal Recall II SS	.570	.246	.296	.030	.013
Inattention t score	-.077	.064		.242	
Response Style t score	-.070	.053		.200	

Table 8.8 indicates that the predictor variable Verbal Recall II Scaled Score is significant in predicting treatment gain scores on the Cognitive Avoidance subscale of the CRI. Furthermore, the model as a whole also proved significant with p = .013.

Table 8.9 *Summary of results from multiple regression on the Seeking Alternative Rewards Subscale of the Coping Response Inventory*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
<u>Model 1</u> – Inattention Standard Error t score	.000	.000	.163	.435	.045
Inattention Variability t score	-.001	.000 .		.065	
<u>Model 2 –</u> Inattention change t score	.000 .	.000	.338	.115	.006
Vigilance Response Time T score	-7.9	.000		.823	.
Vigilance Standard Errot T score	-.001	.000		.052	

Each PV was entered in the model described above

Table 8.9 indicates that in Model 1 none of the predictor variables were significant individually, but collectively they were significant in predicting treatment gain scores on the Seeking Alternative Rewards subscale of the CRI (p= .045). In model 2 the predictor variables individually were not significant but the model as a whole was significant (p = .006).

Table 8.10 *Summary of results from multiple regression on the Emotional Discharge Subscale of the Coping Response Inventory*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – SCOLP Spot the Word Test SS	.038	.018	.055	.042	.042

Table 8.10 indicates that the predictor variable SCOLP SWT Scaled Score is significant in predicting treatment gain scores on the Emotional Discharge subscale of the CRI (p = .042).

8.2 Social Problem Solving Inventory

Table 8.11 outlines descriptive statistics for the Social Problem Solving Inventory. A minus value for mean score indicates an increase in scores from pre to post treatment, i.e. a positive treatment gain score.

Table 8.11 *Descriptive statistics for the Social Problem Solving Inventory (SPSI)*

SPSI Subscale	Number completed (N)	Mean Treatment Gain Score	Standard Deviation
Positive Problem Orientation	46	-0.41	3.739
Negative Problem Orientation	*46*	*2.0*	*0.025*
Rational Problem Solving	47	-2.02	4.331
Impulsivity Style	47	0.55	4.854
Avoidance Style	*47*	*2.00*	*0.02*
Total Score	*48*	*2.00*	*0.081*

Italics indicate data that is NOT normally distributed

Tables 8.12 to 8.17 provide a summary of the results from correlations which were conducted to assess the contribution of cognitive factors in relation to participants' treatment gain scores on the subscales of the Social Problem Solving Inventory (SPSI). Only significant results are reported and any data that was not normally distributed following transformation, the non-parametric equivalent test was used.

Table 8.12 *Summary of cognitive predictor variables significantly related to the Positive Problem Orientation Subscale of the SPSI*

Cognitive Predictor variables	**Pearson's Correlation Sig for Positive Problem Orientation Subscale**
Auditory Recognition Delayed Index	.007
CANTAB Rapid Visual Information Processing SS	.045
Immediate Memory Index	.022
General Memory Index	.035

Correlations are significant at the 0.05 level (2-tailed).

Table 8.13 *Summary of cognitive predictor variables significantly related to the Negative Problem Orientation Subscale of the SPSI*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for Negative Problem Orientation Subscale**
Impulsivity Perseveration t score	.015
Impulsivity Perseveration percentile	.038
Vigilance Standard Error change t score	.013
Vigilance Standard Error change percentile	.012
Attention Deficit Confidence Index	.048
Big/Little Circle % correct	.024
Faces II Recognition SS	.048

Correlations are significant at the 0.05 level (2-tailed).

Table 8.14 *Summary of cognitive predictor variables significantly related to the Rational Problem Solving Subscale of the SPSI*

Cognitive Predictor variables	**Pearson's Correlation Sig for Rational Problem Solving Subscale**
Inattention Commission Percentile	.007
Inattention Detectability t score	.024
Inattention Detectability Percentile	.017
Response Style Percentile	.014

Correlations are significant at the 0.05 level (2-tailed).

Table 8.15 *Summary of cognitive predictor variables significantly related to the Impulsivity Style Subscale of the SPSI*

Cognitive Predictor variables	**Pearson's Correlation Sig for Impulsivity Style Subscale**
Stockings Of Cambridge (SOC) Task mean subsequent time SS	.042
Impulsivity perseveration t score	.019
SOC mean initial Time SS	.049

Correlations are significant at the 0.05 level (2-tailed).

Table 8.16 *Summary of cognitive predictor variables significantly related to the Avoidance Style Subscale of the SPSI*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for Avoidance Style Subscale**
Impulsivity Perseveration t score	.008
Impulsivity Perseveration percentile	.005
SOC mean initial Time SS	.022

Correlations are significant at the 0.05 level (2-tailed).

Table 8.17 *Summary of cognitive predictor variables significantly related to the Total Score Subscale of the SPSI*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for Total Score Subscale**
SOC mean initial Time SS	.019
Information Scaled Score	.021

Correlations are significant at the 0.05 level (2-tailed).

Following correlational analyses the significantly related variables were entered into a regression model. Tables 8.18 to 8.23 provide a summary of the results from multiple regression analyses which were used to assess the contribution of the predictor variables i.e. cognitive factors in relation to participants' treatment gain scores on the subscales of the SPSI:-

Table 8.18 *Summary of results from multiple regression on the Positive Problem Orientation Subscale of the SPSI*

PV	**b**	**SE b**	**Adjusted R Square**	**Sig**	**Model Sig**
<u>Model 1</u> – Auditory Recognition Delayed Index	.115	.047	.298	.023	.011
Cantab SS	-1.225	.478		.019	
<u>Model 2 –</u> Immediate Memory Index	.089	.102	.093	.389	.076
General Memory Index	.007	.109		.948	

Each PV was entered in the model described above

Table 8.18 indicates that in Model 1 both predictor variables were significant and the overall model was also significant in predicting treatment gain scores on the Positive Problem Orientation subscale of the SPSI (p = .011). However Model 2 was not significant overall and neither predictor variables individually were significant.

Table 8.19 *Summary of results from multiple regression on the Negative Problem Orientation Subscale of the SPSI*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
<u>Model 1</u> – Impulsivity t score	.000	.000	.335	.006	.007
Vigilance Standard Error t score	.000	.000		.190	
Attention Deficit Confidence Index	.000	.000		.318	
<u>Model 2 –</u> Big/Little Circle % correct	-.916	.277	.381	.003	.001
Faces II Recognition SS	-.002	.001		.045	

Each PV was entered in the model described above

Table 8.19 indicates that both models are significant in predicting treatment gain scores on the Negative Problem Orientation Subscale of the SPSI. Furthermore three of the predictor variables were also significant individually i.e. Impulsivity Perseveration t score (p=.006), BLC % correct (p=.003) and Faces II Recognition SS (p=.045).

Table 8.20 *Summary of results from multiple regression on the Rational Problem Solving Subscale of the SPSI*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – Inattention Commission Percentile	-.043	.049	.175	.384	.055
Inattention Detectability t score	-.008	.139		.954	
Response Style Percentile	.031	.037		.410	

Each PV was entered in the model described above

Table 8.20 indicates that the model is just short of being significant in predicting treatment gain scores on the Rational Problem Solving Subscale of the SPSI (p=.055). None of the predictor variables were significant individually.

Table 8.21 *Summary of results from multiple regression on the Impulsivity Style Subscale of the SPSI*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – SOC Mean Subsequent time SS	-1.277	.495	.454	.019	.002
Impulsivity t score	.077	.026		.009	
Model 2 – SOC Mean Initial time SS	-1.212	.584	.121	.049	.049

Table 8.21 indicates that all the predictor variables individually were significant at predicting treatment gain scores on the Impulsivity Style subscale of the SPSI. Furthermore, both models were also significant with Model 1 p=.002 and Model 2 p=.049.

Table 8.22 *Summary of results from multiple regression on the Avoidance Style Subscale of the SPSI*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – Impulsivity t score	.000	.000	.597	.003	.000
SOC mean Initial time SS	-.008	.002		.000	

Table 8.22 indicates that both predictor variables were significant at predicting treatment gain scores on the Avoidance Style subscale of the SPSI. However, the model as a whole was also significant with p=.000.

Table 8.23 *Summary of results from multiple regression on the Total Score Subscale of the SPSI*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 –					
SOC mean Initial time SS	-.011	.008	.128	.196	.085
Information SS	-.007	.004		.109	

Table 8.23 indicates that neither the predictor variables individually or collectively were significant in predicting treatment gain scores on the Total Score Subscale of the SPSI.

8.3 The Barratt Impulsivity Scale

Table 8.24 outlines descriptive statistics for the Barratt Impulsivity Scale.

Table 8.24 *Descriptive statistics for the Barratt Impulsivity Scale (BIS)*

BIS Subscale	**Number completed (N)**	**Mean Treatment Gain Score**	**Standard Deviation**
Non planning Impulsiveness	33	1.0	4.43
Motor Impulsiveness	33	1.39	4.123
Cognitive Impulsiveness	*33*	*2.00*	*0.019*
Total Score	*33*	*2.00*	*0.063*

Italics indicate data that is NOT normally distributed

Tables 8.25 to 8.28 provide a summary of the results from correlations which were conducted to assess the contribution of cognitive factors in relation to participants' treatment gain scores on the subscales of the Barratt Impulsivity Scale (BIS). Only significant results are reported and any data that was not normally distributed following transformation, the non-parametric equivalent test was used.

Table 8.25 *Summary of cognitive predictor variables significantly related to the Non Planning Impulsiveness subscale of the BIS*

Cognitive Predictor variables	**Pearson's Correlation Sig for Non Planning Impulsiveness Subscale**
Stockings of Cambridge (SOC) Task mean subsequent time SS	.036

Correlations are significant at the 0.05 level (2-tailed).

Table 8.26 *Summary of cognitive predictor variables significantly related to the Motor Impulsiveness subscale of the BIS*

Cognitive Predictor variables	**Pearson's Correlation Sig for Motor Impulsiveness Subscale**
SOC Problems Solved SS	.033

Correlations are significant at the 0.05 level (2-tailed).

Table 8.27 *Summary of cognitive predictor variables significantly related to the Cognitive Impulsiveness subscale of the BIS*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for Cognitive Impulsiveness Subscale**
Inattention change t score	.043
Inattention change percentile	.044
CANTAB Rapid Visual Information Processing SS	.024

Correlations are significant at the 0.05 level (2-tailed).

Table 8.28 *Summary of cognitive predictor variables significantly related to the Total Score subscale of the BIS*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for Total Score Subscale**
General Memory Index	.040
Auditory Delayed Index	.018

Correlations are significant at the 0.05 level (2-tailed).

Based on the above correlation analyses the significantly related variables were entered into a regression model. Tables 8.29 to 8.32 provide a summary of the results from multiple regression analyses which were used to assess the contribution of the predictor variables i.e. cognitive factors in relation to participants' treatment gain scores on the various subscales of the BIS:-

Table 8.29 *Summary of results from linear regression on the Non planning Impulsiveness Subscale of the BIS*

PV	**b**	**SE b**	**Adjusted R Square**	**Sig**	**Model Sig**
<u>Model 1</u> –					
Stockings of Cambridge (SOC) mean subsequent time SS	1.270	.551	.213	.036	.036

Table 8.29 indicates that the predictor variable SOC mean subsequent time SS is significant in predicting treatment gain scores on the Non Planning Impulsiveness subscale of the BIS.

Table 8.30 *Summary of results from linear regression on the Motor Impulsiveness Subscale of the BIS*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 –					
Stockings Of Cambridge (SOC) Problems Solved SS	-.176	.076	.186	.033	.033

Table 8.30 indicates that the predictor variable SOC problems solved SS is significant in predicting treatment gain scores on the Motor Impulsiveness subscale of the BIS.

Table 8.31 *Summary of results from multiple regression on the Cognitive Impulsiveness Subscale of the BIS*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – Inattention change t score	.000	.000	.253	.559	.109
Cantab RVIP SS	-.009	.004		.069	

Table 8.31 indicates that none of the predictor variables were significant in model 1 either individually or collectively.

Table 8.32 *Summary of results from multiple regression on the Total Score Subscale of the BIS*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
<u>Model 1</u> – General Memory Index	.001	.002	.161	.818	.051
Auditory Delayed Index	-.002	.002		.215	

Table 8.32 indicates that the model was almost significant at p=.051 but fails to reach significance and is therefore not predictive.

8.4 Summary and Discussion of Findings

The results above indicate that memory, attention and executive functioning were all significant predictor variables in regression models for the various treatment outcome scores in the Social Problem Solving Group. Memory and attention predictor variables appeared to be the most frequent significant predictor variables for the Coping Response Inventory. Executive functioning was a significant predictor variable for the emotional discharge subscale of the CRI, which concurs with the findings of previous research highlighting the role of executive functioning and emotion regulation in treatment outcome.

Memory, attention and executive functioning were again significant predictor variables for the SPSI treatment gain scores. On the Impulsivity subscale of the SPSI the predictor variable Impulsivity t score was highly predictive, indicating a strong relationship between this cognitive measure of attention, and the outcome measure of impulsiveness on the SPSI.

Only executive functioning was a significant predictor variable for the BIS treatment gain scores. Although correlated to treatment outcome scores, attention and memory predictor variables did not prove significant when entered into the regression model. In the Non-planning Impulsiveness scale, executive functioning, specifically the Stockings of Cambridge task which is a spatial planning task, was a significant predictor variable. It would appear that again the predictor variable and outcome measure, both involving planning, are strongly related.

9 THE ANGER MANAGEMENT GROUP

The Anger Management Group is based on the cognitive-behavioural model of anger proposed by Novaco (1994). The hospital in this study developed the programme in consultation with Professor Ray Novaco. The group consists of an initial preparatory stage involving assessment and motivational work, following by eight sessions on understanding anger, eight sessions on managing anger and a final four sessions on relapse prevention. In total therefore, the group consists of 20 sessions each lasting approximately 2.5 hours. The following measures were selected for this study as discussed in section 3.4.1, from the battery that are administered pre and post treatment:-

Novaco Anger Scale and Provocation Inventory (NAS-PI)(Novaco, 1994)(see Appendix 11)

This measure is composed of two parts, a 60 item self-report measure containing Cognitive, Arousal, Behavioral and Anger Regulation subscales, which comprise a Total score for anger disposition. High scores indicate problems with anger apart from the anger regulation scale where high scores reflect the individual's perceived ability to regulate their own anger i.e. high scores are good in this subscale. The Provocation Index consists of 25 items that describe the type of situations that produce anger in an individual, and high scores indicate numerous situations provoke anger. The NAS-PI was developed and validated for use with mentally disordered as well as normal populations. The NAS Total score subscale was found to produce a reliability score of .95 and a test-retest (two-weeks) reliability of .84 in research with psychiatric patients (Novaco, 1994).

The Imaginal Provocation Test (Novaco, 1975)(see Appendix 12)

This is a 40 item self-report measure in which an individual is presented with four different scenarios, and asked to rate on a scale from 1-4 how they would feel regarding this situation. Scores are split into separate indices i.e. anger reaction, behavioural reaction, anger composite, anger regulation and memory recall. High scores in the first three indices indicate problems with anger, whereas high score in anger regulation and

memory recall are positive. The measure was developed for use with people with intellectual disabilities and has demonstrated internal reliability and concurrent validity.

The Emotional Quotient Inventory (EQI)(BarOn, 1997)(see Appendix 13)

This is a self-report measure consisting of 133 items which are designed to measure an individual's ability to perceive, identify and manage emotion. The items have a five point rating scale and can be summed to give a total score as well as subscale scores which are as follows:- intrapersonal, interpersonal, stress management, adaptability and general mood. High scores indicate people who are 'in touch with' their feelings and emotions i.e. they know what they are feeling and understand why they feel that way. The measure has been found to have both good reliability and validity (Dawda & Hart, 2000).

9.1 Multiple Regression: Anger Management Group

Table 9.0 outlines descriptive statistics for the Imaginal Provocation Test. A minus value for mean score indicates an increase in scores from pre to post treatment, i.e. a positive treatment gain score.

Table 9.0 *Descriptive statistics for the Imaginal Provocation Test (IPT)*

IPT Subscale	**Number completed (N)**	**Mean Treatment Gain Score**	**Standard Deviation**
Behavioural Reaction	14	2.36	4.749
Anger Composite	14	2.57	5.667
Anger Regulation	14	-3.14	3.592
Imaginal Clarity	*14*	*2.00*	*0.008*
Memory Recall	14	-1.21	1.626
Anger Reaction	14	0.21	1.805

Italics indicate data that is NOT normally distributed

Tables 9.1 to 9.5 provide a summary of the results from correlations which were conducted to assess the contribution of cognitive factors in relation to participants' treatment gain scores on the subscales of the Imaginal Provocation Test (IPT). Only significant results are reported and any data that was not normally distributed following transformation, the non-parametric equivalent test was used.

Table 9.1 *Summary of cognitive predictor variables significantly related to the Behavioural Reaction Subscale of the IPT*

Cognitive Predictor variables	**Pearson's Correlation Sig for Behavioural Reaction Subscale**
Inattention Omission t score	.004
Inattention Omission percentile	.003
Inattention change t score	.033
SS picture completion	.027

Correlations are significant at the 0.05 level (2-tailed).

Table 9.2 *Summary of cognitive predictor variables significantly related to the Anger Composite Subscale of the IPT*

Cognitive Predictor variables	**Pearson's Correlation Sig for Anger Composite Subscale**
Inattention Omission t score	.046
Inattention Omission percentile	.042
Inattention Response Time percentile	.014
Picture completion SS	.035

Correlations are significant at the 0.05 level (2-tailed).

Table 9.3 *Summary of cognitive predictor variables significantly related to the Anger Regulation Subscale of the IPT*

Cognitive Predictor variables	**Pearson's Correlation Sig for Anger Regulation Subscale**
IED stages complete	.040
IED stages complete SS	.043
IED total errors SS	.017
Digit Symbol SS	.014
Block Design SS	.010
Symbol Search SS	.025

Correlations are significant at the 0.05 level (2-tailed).

Table 9.4 *Summary of cognitive predictor variables significantly related to the Memory Recall Subscale of the IPT*

Cognitive Predictor variables	**Pearson's Correlation Sig for Memory Recall Subscale**
Inattention Standard Error t score	.019
Inattention Variability t score	.004
Inattention change t score	.028
Inattention change percentile	.043
Inattention Omission t score	.002
Inattention Omission percentile	.005

Correlations are significant at the 0.05 level (2-tailed).

Table 9.5 *Summary of cognitive predictor variables significantly related to the Anger Reaction Subscale of the IPT*

Cognitive Predictor variables	**Pearson's Correlation Sig for Anger Reaction Subscale**
CANTAB Rapid Visual Information Processing SS	.020
Vocabulary SS	.002
Digit Symbol SS	.046
Symbol Search SS	.015

Correlations are significant at the 0.05 level (2-tailed).

Due to the small sample size it was not possible to perform regression analysis on the above data.

9.2 Novaco Anger Scale and Provocation Inventory (NAS-PI)

Table 9.6 outlines descriptive statistics for the NAS-PI. A minus value for mean score indicates an increase in scores from pre to post treatment, i.e. a positive treatment gain score.

Table 9.6 *Descriptive statistics for the Novaco Anger Scale- Provocation Inventory (NAS-PI)*

NAS-PI Subscale	**Number completed (N)**	**Mean Treatment Gain Score**	**Standard Deviation**
Total Score	41	-1.66	9.475
Cognitive	41	-0.90	4.176
Arousal	41	-0.22	3.966
Behavioural	41	-0.54	3.861
Anger Regulation	41	-0.2	3.523
Provocation Inventory	*36*	*1.99*	*0.044*

Italics indicate data that is NOT normally distributed

Tables 9.7 to 9.11 provide a summary of the results from correlations which were conducted to assess the contribution of cognitive factors in relation to participants' treatment gain scores on the subscales of the NAS-PI. Only significant results are reported and any data that was not normally distributed following transformation, the non-parametric equivalent test was used.

Table 9.7 *Summary of cognitive predictor variables significantly related to the Total Score Subscale of the NAS-PI*

Cognitive Predictor variables	**Pearson's Correlation Sig for Total Score Subscale**
SOC mean subsequent time SS	.025
SOC mean initial time SS	.013

Correlations are significant at the 0.05 level (2-tailed).

Table 9.8 *Summary of cognitive predictor variables significantly related to the Cognitive Subscale of the NAS-PI*

Cognitive Predictor variables	**Pearson's Correlation Sig for Cognitive Subscale**
Similarities SS	.026
SOC mean initial time SS	.047

Correlations are significant at the 0.05 level (2-tailed).

Table 9.9 *Summary of cognitive predictor variables significantly related to the Arousal Subscale of the NAS-PI*

Cognitive Predictor variables	**Pearson's Correlation Sig for Arousal Subscale**
Attention Deficit confidence index	.041
SOC mean initial time SS	.026
SOC mean subsequent time SS	.028
SOC problems solved SS	.008
Faces II Recognition SS	.028

Correlations are significant at the 0.05 level (2-tailed).

Table 9.10 *Summary of cognitive predictor variables significantly related to the Anger Regulation Subscale of the NAS-PI*

Cognitive Predictor variables	**Pearson's Correlation Sig for Anger Regulation Subscale**
Vigilance Response Time t score	.035

Correlations are significant at the 0.05 level (2-tailed).

Table 9.11 *Summary of cognitive predictor variables significantly related to the Provocation Inventory Subscale of the NAS-PI*

Cognitive Predictor variables	**Spearman's Rho Correlation Sig for Provocation Inventory Subscale**
Inattention Standard Error t score	.044
Inattention Standard Error percentile	.035
Impulsivity percentile	.042
Attention Deficit confidence index	.034
Verbal IQ actual difference	.050

Correlations are significant at the 0.05 level (2-tailed).

Based on the above correlation analyses the significantly related variables were entered into a regression model. Tables 9.12 to 9.16 provide a summary of the results from multiple regression analyses which were used to assess the contribution of the predictor variables i.e. cognitive factors in relation to participants' treatment gain scores on the various subscales of the NAS-PI:-

Table 9.12 *Summary of results from multiple regression on the Total score Subscale of the NAS-PI*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 –					
Stockings Of Cambridge (SOC) mean subsequent time SS	2.510	2.258	.223	.279	.027
SOC mean initial time SS	2.248	1.431		.131	

Table 9.12 indicates that although the predictor variables were not significant individually, together the model proved significant at p=.027.

Table 9.13 *Summary of results from multiple regression on the Cognitive Subscale of the NAS-PI*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 –					
Similarities SS	-.813	.256	.397	.005	.002
SOC mean initial time SS	.973	.471		.052	

Table 9.13 indicates that the predictor variable Similarities SS was significant individually, and both variables together proved significant at p=.002.

Table 9.14 *Summary of results from multiple regression on the Arousal Subscale of the NAS-PI*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 –					
Attention Deficit Confidence Index	.037	.032	.228	.265	.038
SOC mean initial time SS	.982	.493		.062	
Model 2 –					
SOC mean subsequent SS	1.675	.758	.368	.038	.003
SOC problems solved SS	-.207	.073		.010	
Model 3 –					
Faces II Recognition SS	-.727	.312	.141	.028	.028

Each PV was entered in the model described above

Table 9.14 indicates that all three models were significant and three predictor variables individually were significant i.e. SOC mean sub SS (p=.038), SOC problems solved SS (=.010) and Faces II Recognition SS (p=.028).

Table 9.15 *Summary of results from linear regression on the Anger Regulation Subscale of the NAS-PI*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 –					
Vigilance Response Time t score	-.083	.037	.144	.035	.035

Table 9.15 indicates that the predictor variable Vigilance RT t score is predictive of treatment gain scores on the Anger Regulation subscale of the NAS-PI (p=.035).

Table 9.16 *Summary of results from multiple regression on the Provocation Inventory Subscale of the NAS-PI*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 –					
Inattention Standard Error t score	.000	.001	-.005	.765	.403
Impulsivity percentile	.000	.000		.286	
Model 2 – Attention Deficit confidence Index	.000	.000	.065	.328	.227
Verbal IQ actual difference	-.001	.001		.375	

Table 9.16 indicates that both models were not significant and none of the predictor variables individually were significant.

9.3 Emotional Quotient Inventory (EQI)

Table 9.17 outlines descriptive statistics for the EQI. A minus value for mean score indicates an increase in scores from pre to post treatment, i.e. a positive treatment gain score.

Table 9.17 *Descriptive statistics for the Emotional Quotient Inventory (EQI)*

EQI Subscale	**Number completed (N)**	**Mean Treatment Gain Score**	**Standard Deviation**
Total Score	31	-5.23	12.465
Intrapersonal	31	-5.45	11.50
Interpersonal	31	-1.97	12.26
Stress Management	31	-3.90	12.81
Adaptability	31	-6.06	15.425
General Mood	*36*	*1.97*	*0.103*

Italics indicate data that is NOT normally distributed

Tables 9.18 to 9.21 provide a summary of the results from correlations which were conducted to assess the contribution of cognitive factors in relation to participants' treatment gain scores on the subscales of the EQI. Only significant results are reported and any data that was not normally distributed following transformation, the non-parametric equivalent test was used.

Table 9.18 *Summary of cognitive predictor variables significantly related to the Intrapersonal Subscale of the EQI*

Cognitive Predictor variables	**Pearson's Correlation Sig for Intrapersonal Subscale**
Inattention Response Time t score	.019

Correlations are significant at the 0.05 level (2-tailed).

Table 9.19 *Summary of cognitive predictor variables significantly related to the Interpersonal Subscale of the EQI*

Cognitive Predictor variables	**Pearson's Correlation Sig for Interpersonal Subscale**
Information SS	.004
Symbol Search SS	.023
Processing Speed Index	.034

Correlations are significant at the 0.05 level (2-tailed).

Table 9.20 *Summary of cognitive predictor variables significantly related to the Adaptability Subscale of the EQI*

Cognitive Predictor variables	**Pearson's Correlation Sig for Adaptability Subscale**
Inattention Omission percentile	.029
SOC Mean Subsequent time SS	.016
SOC problems solved SS	.049

Correlations are significant at the 0.05 level (2-tailed).

Table 9.21 *Summary of cognitive predictor variables significantly related to the Stress Management Subscale of the EQI*

Cognitive Predictor variables	**Pearson's Correlation Sig for Stress Management Subscale**
SOC Mean Initial time SS	.010

Correlations are significant at the 0.05 level (2-tailed).

Based on the above correlation analysis the significantly related variables were entered into a regression model. Tables 9.22 to 9.25 provide a summary of the results from multiple regression analyses which were used to assess the contribution of the predictor variables i.e. cognitive factors in relation to participants' treatment gain scores on the various subscales of the EQI:-

Table 9.22 *Summary of results from linear regression on the Intrapersonal Subscale of the EQI*

PV	**b**	**SE b**	**Adjusted R Square**	**Sig**	**Model Sig**
<u>Model 1</u> –					
Inattention Response Time t score	-.539	.207	.255	.019	.019

Table 9.22 indicates that the predictor variable Inattention Response Time t score is significant in predicting treatment gain scores on the Intrapersonal subscale of the EQI (p= .019)

Table 9.23 *Summary of results from multiple regression on the Interpersonal Subscale the EQI*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 – Information SS	2.391	.746	.297	.004	.004
Model 2 – Symbol Search SS	1.304	1.198	.165	.289	.063
Processing Speed Index	.228	.320		.485	

Table 9.23 indicates that the predictor variable Information scaled score is significant in predicting treatment gain scores on the Interpersonal subscale of the EQI (p= .004). However, the predictor variables in model 2 are not significant either individually or collectively.

Table 9.24 *Summary of results from linear regression on the Stress Management Subscale of the EQI*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 –					
SOC mean initial time SS	9.517	3.271	.293	.010	.010

Table 9.24 indicates that the predictor variable SOC mean initial time SS is significant in predicting treatment gain scores on the Stress Management subscale of the EQI (p= .010).

Table 9.25 *Summary of results from multiple regression on the Adaptability Subscale the EQI*

PV	b	SE b	Adjusted R Square	Sig	Model Sig
Model 1 –					
Inattention Omission Percentile	.237	.099	.217	.029	.029
Model 2 – SOC mean Subsequent time SS	-8.514	3.403	.372	.024	.009
SOC problems solved SS	.495	.242		.058	

Table 9.25 indicates that in model 1 the predictor variable Inattention Omission Percentile is significant in predicting treatment gain scores on the Adaptability subscale of the EQI (p= .030). In model 2 the predictor variable SOC mean sub SS is significant individually at p=.024 and the model as a whole is significant at p=.009.

9.4 Summary and Discussion of Findings

The results indicate that cognitive predictor variables of memory, attention, IQ and executive functioning were significantly predictive of treatment gain scores in the NAS-PI, and similarly in the EQI apart from memory. Executive functioning was again a frequently significant predictor variable in the EQI measure with significant results in the Adaptability and Stress Management subscales. However, on the Adaptability Subscale this relationship was negative meaning that as treatment gain scores increased executive functioning scores decreased. A possible explanation for this may be that adapting to situations and managing stress require the ability to plan and problem solve,

which are both executive functioning skills, resulting in this cognitive variable being significantly predictive.

In the Total score subscale of the NAS-PI executive functioning variables were not significant individually, but together were predictive of treatment gain scores. However, in the Arousal subscale both executive functioning variables were predictive individually and collectively. This may be a result of the connection between executive functioning and emotion regulation in predicting treatment outcome (Fishbein *et al*., 2006).

Results from the above analyses are reviewed in the discussion section in relation to the research hypotheses and the research questions. The results are also considered in relation to previous research findings and implications for future research will be explored.

10 DISCUSSION

10.1 Overview

The present study used an exploratory quantitative approach to investigate if cognitive impairment was related to treatment responsivity in mentally disordered offenders. The results concerning the demographic and clinical profiles of the participants are reviewed, and the main findings are discussed in relation to previous research and the research hypotheses and questions. Following this the limitations of the current study and suitability of the methodology are explored. Finally the clinical implications of this research are discussed along with the potential for future research in this area.

10.2. Demographic and clinical profile of participants

Participants in the study primarily had a diagnosis of schizophrenia or other psychotic disorder (78%). Almost a quarter of the sample (23%) had a diagnosis of personality disorder, which is a significant proportion, and often in conjunction with psychosis. When such co-morbid difficulties, combined with violent offending behaviour and potential substance misuse exist, treatment responsivity is further complicated (Preston, 2000). The age range of 20-67 years allowed a wide range of the population to participate in the study, and therefore age could be considered a potential predictor variable in relation to outcome scores. As such any potential variation in performance due to age could be ascertained. Previous research by Fishbein *et al*., (2006) in this area excluded participants over the age of 49 meaning a more restricted sample, and therefore it may be viewed as a strength of this study that a wider range of participants were included. Likewise participants were not excluded on the basis of a low IQ as in the Fishbein *et al*., (2006) study, meaning that these results reflect the full range of capabilities of an MDO sample. Rather than exclude participants on the basis of low IQ, group programmes in The hospital in this study are adapted to meet their needs and participants are supplied with extra 1-1 support should they require it. However, as the previous research discussed has been conducted on a prison population, the demographic and clinical profile of participants in this study appears to be characteristic of an MDO population in Scotland.

10.3 Summary and interpretation of the research findings

10.31 The role of memory in treatment gain

Research hypothesis 1: There will be a significant positive association between memory functioning as measured by the Wechsler Memory Scale Third Edition (WMS-III) (Wechsler, 1997), and treatment gain as measured by pre and post treatment scores.

Several significant relationships were found between memory predictor variables and outcome scores on the Drug and Alcohol Knowledge Questionnaires, the CRI and SPSI (used in the Social Problem Solving Group) and the NAS-PI (used in the Anger Management Group). The results indicate that memory is an important predictor variable for treatment outcome scores as measured by several reliable and valid outcome measures. However, in comparison to the results on the other cognitive domains assessed in this study and their ability to predict treatment response, memory appears to play a reduced role than what might be expected. Previous research has found verbal memory specifically to be predictive of functional outcome in schizophrenia (Green *et al*., 2004).

Nonetheless, collectively the results show that memory functioning is associated with participants' treatment gain scores as measured by pre and post treatment scores. The research hypothesis can therefore be accepted, as memory functioning was associated with treatment gain.

10.32 The role of attention in treatment gain

Research hypothesis 2: There will be a significant positive association between attention functioning as measured by the Test of Variables of Attention (TVA) (Greenberg & Waldman, 1993), and treatment gain as measured by pre and post treatment scores.

Attention proved to be a significant predictor variable in treatment gain scores on the Drug Knowledge questionnaire, the DTCQ, the Understanding of Medication questionnaire (used in the CWMI group), the CRI and SPSI, and the NAS-PI and EQI. Therefore attention was a significant predictor variable across all the groups and on several outcome measures. A possible explanation for the increased role of attention in comparison to memory assessed in Hypothesis one, may be that in order to recall information it must first be properly encoded which requires attending to the information. As such, if a participant has difficulty concentrating and paying attention to information presented in a group, and sustaining attention for the duration of a session this may be more predictive of their performance in treatment rather than memory ability (Medalia & Choi, 2009). The results appear to concur with previous research which found cognitive impairments in areas such as attention, predicted ability to meet functional goals in people with schizophrenia (Green *et al*., 2004).

In sum, the results show that attention is associated with participants' treatment gain scores as measured by pre and post treatment scores. The research hypothesis can therefore be accepted, as attention was associated with treatment gain.

10.33 The role of executive functioning in treatment gain

Research hypothesis 3: There will be a significant positive association between executive functioning as measured by the Cambridge Automated Neuropsychological Test Automated Battery (CANTAB) (Robbins & Sahakian, 1988), and the Speed and Capacity of Language Processing Test (SCOLP) (Baddeley, Emslie & Nimmo-Smith, 1992), and treatment gain as measured by pre and post treatment scores.

Executive functioning variables proved to be significant in predicting treatment gain scores on numerous measures across the Drug and Alcohol Saying No Group, Social Problem Solving Group and Anger Management group. However this did not appear to be the case in the Drug and Alcohol Education Group and CWMI group. It may be that

these two psycho-educational groups do not require the same planning and problem solving skills as a more CBT based course such as Anger Management. An alternative explanation may be that these groups used measures which have not been tested for reliability and validity, which may have impacted on the findings.

Nonetheless, the results concur with previous research highlighting the role of executive functioning in predicting treatment response from a CBT programme (Fishbein *et al*., 2006). Overall the results show that executive functioning is associated with participants' treatment gain scores as measured by pre and post treatment scores. The research hypothesis can therefore be accepted, as executive functioning was associated with treatment gain.

10.34 The role of IQ in treatment gain

Research hypothesis 4: There will be a significant positive association between IQ as measured by the Wechsler Adult Intelligence Scale Third Edition (WAIS-III) (Wechsler, 1997), and treatment gain as measured by pre and post treatment scores.

IQ predictor variables were significantly predictive in the D&A Education group, the CWMI group, and the Anger Management group. However, as noted previously in the D&A Education group, IQ was predictive as part of a regression model and not individually. In the CWMI and Anger groups IQ variables were significant individually in predicting treatment gain scores. In the CWMI group the IQ variable Picture Completion SS (part of Performance IQ) was predictive for the Understanding of Medication Questionnaire. This may reflect the need for more global cognitive ability to understand information, as opposed to specific planning or problem-solving skills reflected by executive functioning. Similarly in the EQI measure, the IQ variable Information SS (part of Verbal IQ) was predictive of treatment gain scores on the Interpersonal subscale. A possible explanation for this may be that general intelligence is

more predictive of interpersonal functioning rather than specific cognitive measures such as executive functioning. This would concur with previous research, which found that general IQ was more predictive of functional outcome in patients with schizophrenia, than more specific measures of memory or executive functioning (Leeson *et al*., 2009).

To summarise, the results show that IQ is associated with participants' treatment gain scores as measured by pre and post treatment scores. The research hypothesis can therefore be accepted, as IQ was associated with treatment gain.

10.4 Exploratory Research Questions

The following exploratory questions were also considered in relation to the research findings:

i) Are some forms of cognitive impairment more predictive than others in determining response to treatment?

It would appear from the results that attention predictor variables were the most frequently significant variables in predicting response to treatment. Measures of attention were predictive across all the groups whether psycho-educational or CBT based. This may be because, as discussed previously, deficits in attention may make it difficult for an individual to benefit from treatment, as they are unable to process and retain information, or maintain attention during sessions. However, all the cognitive predictor variables proved significant in predicting treatment outcome scores, and any variation in their predictive ability may be due to differences between the groups and the outcome measures used.

ii) Is there a difference between the type of group treatment and the consequent impact of cognitive variables on a patient's response?

The results indicate that treatment gain scores in all the groups were associated with cognitive impairment scores in at least one domain. Furthermore, treatment gain scores in the NAS-PI measure in the Anger Management group were predicted by at least one predictor variable from the domains of attention, IQ, memory and executive functioning. This is a CBT based group and in comparison to the two psycho-educational groups (D&A Education and CWMI), may require higher order cognitive skills such as executive functioning. This would appear to concur with the results from this study which indicate that executive functioning was not predictive of treatment gain scores in the two psycho-educational groups. These results therefore suggest that the CBT based groups (D&A Saying No, Social Problem Solving and Anger Management) require higher order cognitive skills such as executive functioning, whereas the psycho-educational groups do not.

iii) Is there a difference between schizophrenia or other diagnoses in regards to cognitive impairment and response to treatment?

The majority of participants in this study had a diagnosis of schizophrenia or other psychotic disorder (78%). As such comparing participants on the basis of diagnosis was not considered relevant under these circumstances, due to unequal group sizes making statistical analysis problematic.

iv) Does age have an impact on cognitive impairment and response to treatment when considered as a predictive factor?

Following correlational analyses no significant relationships were found between age and cognitive impairment variables, precluding regression analysis. The fact that age was not found to be a significant predictor variable for cognitive impairment concurs with previous research, stating that cognitive impairment is relatively stable from the onset of schizophrenia to approximately 65 years of age in the majority of patients (Green, 2006).

10.41 Key Findings

To summarise, the study findings indicate that cognitive impairment does impact on treatment responsivity in mentally disordered offenders. This is evidenced firstly in the domain of memory as results revealed higher memory scores were associated with higher treatment gain scores. Conversely those with poorer memory functioning had reduced treatment gain scores. These results would appear to concur with research cited previously which indicated deficits in working memory in rats with a damaged hippocampus which mimicked the symptoms of schizophrenia (Lipska *et al*., 2004).

In regards to attention, the results revealed that greater inattention scores resulted in decreased treatment gain scores i.e. the more impulsive and unable to concentrate an individual is the less they benefitted from treatment. As such, this study lends further support to the evidence base that cognitive abilities such as sustained auditory attention are necessary in order to benefit from treatment (Kurtz *et al*., 2008).

Executive functioning was also significantly correlated with treatment gain scores meaning that the more difficulties an individual had with planning and problem-solving, the less they benefitted from treatment. These findings concur with those cited earlier from a prison population where executive functioning predicted response to CBT treatment (Fishbein *et al*., 2006).

Finally in the domain of IQ the findings from this study indicate that the higher an individual's IQ is the more likely they are to receive greater benefit from treatment. This evidence supports that discussed previously which demonstrated the importance of targeting cognitive impairment as a treatment intervention, and following cognitive remediation patients display improved cognitive skills (Medalia & Choi, 2009). Enhancing an individual's cognitive abilities allows them to gain maximum benefit from treatment, and the results of this study support the need to improve IQ in schizophrenia to optimise treatment gain. The findings therefore overall lend further support to the

existence of cognitive impairment in schizophrenia, and specifically in a population of mentally disordered offenders.

10.5 Critical Evaluation of the study

This research study will now be critically evaluated by addressing the strengths and weaknesses of the methodology. Factors such as sample size, the measures used, differences in the groups, use of existing data, and the statistical analysis are reviewed in the following sections.

10.51 Statistical analysis

Using multiple regression requires the data to meet several assumptions such as sufficient numbers (Dancey & Reidy, 2004). Although this assumption was not violated, it was not possible to conduct regression analysis with some of the smaller groups due to insufficient numbers. Small sample size also results in the power of any findings being weakened which is a consideration given the largest group in the study consisted of 58 participants. The results did reveal several significant findings, however greater numbers in each group would produce more reliable results, and greater confidence in the ability to extrapolate the findings to a wider population. Furthermore, a larger sample would have allowed the use of statistical methods of regression which may have been more sophisticated and sensitive to change (Brace *et al.*, 2006). Nonetheless, this study incorporated data from 114 mentally disordered offenders, a population that is under researched and from which it is difficult to recruit participants (McGuire, 2000). The data was also separated into groups based on the psychological intervention completed to allow specific examination of performance in each group, rather than a more general overview of treatment gain.

Due to the exploratory nature of this study numerous variables were assessed using correlational analysis. This does not allow the direction of causality to be measured meaning that interpretations of these relationships must be made with caution (Dancey & Reidy, 2004).

The study involved the use of pre-existing data some of which was routinely collected for service evaluation purposes. However, if a participant did not complete treatment or was transferred prior to completion of treatment, post group psychometrics were not conducted. It was therefore not possible to establish treatment gain scores meaning that the sample size was reduced in each group. This also resulted in a lack of data on people who did not complete treatment, and comparisons between completers/non completers could therefore not be made.

10.52 Group Therapy Factors

In relation to the group treatments a relevant issue may be the order in which participants complete group treatments. As part of the treatment process patients in The hospital in this study routinely complete psycho-educational groups first such as the CWMI and Drug and Alcohol Education groups, before moving on to longer more CBT based intervention such as Anger Management. As such these groups may therefore be the first psychological treatment patients have been exposed to. This also means that participants in groups such as Anger Management may well have already completed groups such as CWMI and Drug and Alcohol Education. These patients have therefore been exposed to more psychological therapy and as a result may be more psychologically minded and responsive to treatment. This may lead to higher treatment gain scores compared with participants who have had their first experience of psychological therapy.

A further issue which may have impacted on the results is the duration of the group treatment. The Drug and Alcohol Education group runs for ten one hour sessions in comparison to the Anger Management group which consists of 20 sessions lasting approximately 2.5 hours. This is a significant difference in duration of treatment and may impact on the treatment gain scores achieved, as longer groups may require more sustained attention and memory from session to session. Due to the difference in the groups on factors such as duration of treatment and psycho-education versus CBT,

statistical comparisons between them were not conducted as this would be an unfair comparison.

The skill mix of staff in the groups, level of training and experience may have impacted on treatment outcome. The Psychological Therapies Service groups are run by various members of staff using a multi-disciplinary approach. However, nursing staff who volunteer to become involved in psychological therapy are seconded to the service either part time or full time. As such, some of the staff may not have specific qualifications in psychological therapies such as CBT, and may not have the same experience as other staff. Similarly groups involve members of staff at various stages of training from assistant to consultant level, and this variation may impact on treatment delivery.

As stated previously patients normally complete psycho-educational groups first before moving on to more complex treatments. These patients are generally at the beginning of their admission and although their mental health may have stabilised, they may still be quite unwell in comparison to patients who have been stabilised on medication for many years. Participants may also have completed more than one psychological group, and may have been engaged in more than one group at a time. However, participation in more than one therapy at a time is generally avoided to ensure patients do not become over-loaded.

10.53 Psychometric Measures

The various psychological groups assessed in this study use different psychometrics to assess the effectiveness of treatment. As stated in section 3.4.1 some of these measures were developed by the hospital in this study, and have therefore not been assessed for reliability and validity. There is also the issue of groups using different measures, some of which may be more sensitive to change than others and thereby impact on the results. Notwithstanding these limitations, the groups used several reliable and valid outcome measures, and more than one measure for each group.

An issue discussed in section 1.7 relates to how to measure treatment change. In this study treatment change was determined by the difference between pre and post treatment scores. However, this does not take into account clinical impressions on performance in treatment which may be different to any apparent gain on outcome measures. The outcome measures are also self-report meaning that it is possible for an individual to complete them in such a way as to make their performance look favourable. This may be particularly relevant in forensic settings were patients wish to "get out" and therefore modify their responses to demonstrate positive findings. Offenders often engage in treatment due to pressure from external sources such as family or friends or in an attempt to reduce their sentence (Kennedy, 2000). The outcome data in this study was collected as part of routine service evaluation and was therefore relevant to the patient's care. In comparison, if the treatment outcome data had been collected specifically for research purposes, and had no impact on participants treatment they may have been more likely to answer freely. The cognitive data which was collected as part of a neuropsychological research study may therefore be more reliable than the treatment outcome data.

The use of self-report measures may also be problematic due to the cognitive limitations of participants. If they have poor literacy skills and a low IQ they may struggle to understand questionnaires unless they are explained. This issue has been highlighted in patients with poor concentration and fatigue where self-report measures have been suggested to have limited usefulness (Faravelli *et al.*, 1986).

10.54 Cognitive data

A potential weakness in the research methodology was that not all participants had their neuropsychological assessment conducted prior to commencement of treatment. As the research involved the use of existing neuropsychological data which was matched to service evaluation data (treatment gain and adherence scores), some participants may have engaged in treatment before or after their neuropsychological assessment. In previous research cognitive functioning has been measured prior to treatment in order to

gain a true reflection of the impact of this on treatment outcome (Fishbein *et al.*, 2006). Conducting neuropsychological assessment after treatment may alter the findings as treatment may impact on an individual's ability level, as they may have improved attention and memory having been required to attend to information presented and remember this between sessions. Therefore, future prospective research should aim to ensure neuropsychological assessment is conducted prior to treatment.

There was also variation in the time between neuropsychological assessment and treatment, with some participants having a longer or shorter time period between assessment and treatment. However, in order to assess the relevance of this issue a sample of participants was selected who had completed treatment and neuropsychological assessment within a two year time period. The correlation and multiple regression analyses was re-run on this group, and no significant differences were found between this group and those included outwith the two year time frame. Therefore it would appear that the issue of time between neuropsychological assessment and treatment did not appear significant in this study. Previous research indicates that cognitive impairment is stable in schizophrenia, and there is no significant difference in people with first episode psychosis and patients with chronic schizophrenia (Hutton *et al.*, 2002). The fact that time between neuropsychological assessment and treatment in this study had no significant impact on the results, appears to concur with the evidence supporting the stability of cognitive impairment in schizophrenia.

The battery of neuropsychological assessments conducted was thorough allowing a broad range of cognitive domains to be measured. This is in comparison to the potential use of a more general measure of functioning such as the WAIS alone, or screening measures such as the Addenbrooke's Cognitive Examination –Revised (ACE-R)(Mioshsi *et al*., 2006).

10.55 Use of existing data

Using existing data within the hospital was beneficial in that no further recruitment was required. This is important as the patients within the hospital are frequently being asked to participate in research and are arguably over researched. Making use of existing data can also be viewed as part of service evaluation and therefore meets the requirements of clinical governance/audit, as well as being cost effective. However, it would be preferable for future research to utilise a prospective study design in order that predictions regarding future behaviour can be made. Nonetheless, as this study involved assessing the impact of cognitive impairment on treatment gain and adherence a retrospective design was appropriate.

The exploratory nature of this study may mean that not all variables were explored that could have been relevant. However, it may be viewed as a baseline from which future research exploring cognitive impairment and treatment responsivity can be guided. Although weaknesses of the research have been highlighted the results indicate the role of cognitive impairment in predicting treatment gain and adherence in mentally disordered offenders. The clinical implications of this are now discussed.

10.6 Clinical Implications

The results from this study reinforce the relevance of viewing cognitive impairment as a specific treatment target in schizophrenia, and recognition of these deficits as a core symptom of schizophrenia. Previous research states that cognitive skills programmes are more effective with offenders of average to high-average intelligence, than those with below average intelligence (Fabiano, Porporino, & Robinson, 1991). This being the case there would appear to be a strong argument for addressing cognitive impairment and attempting to improve deficits in cognitive functioning. The results indicate that cognitive impairment is significantly predictive of response to treatment. This finding in a population of MDO's, concurs with previous research findings in an offender and outpatient setting (Fishbein *et al*., 2006; Leeson *et al*., 2009). It has been stated that

interventions for MDO's should be based on knowledge of more researched populations such as offenders, and the results from this study appear to support this argument (McGuire, 2000).

Given that treatment responsivity has a subsequent impact on recidivism these results lend support to the need to address both cognitive impairment and treatment responsivity. Risk management is an integral part of rehabilitating mentally disordered offenders, and incorporating cognitive impairment and its' impact on treatment responsivity may significantly enhance effective risk management. An individual's response to treatment is crucially important in order to reduce the probability of reoffending, and successfully rehabilitate offenders (Kennedy, 2000).

The findings from this study support the use of pre-group screening to determine which MDO's are most likely to benefit from treatment based on their level of cognitive impairment. By identifying what specific deficits an individual has, treatment can then be modified accordingly in order that maximum benefit may be achieved. Knowledge and awareness of the impact of an individual's cognitive deficits on their functioning, will allow group and/or individual treatment to be tailored to meet these demands. Given that treatment should be driven by a formulation of each individual's needs, this approach fits with the new clinical model proposed by the hospital in this study. A further benefit may result if fewer individuals are required to repeat treatment, or there is a reduction in the number who undergo treatment with limited or no significant improvement upon completion.

10.7 Future Research

In relation to the study limitations highlighted previously there are several potential options for future research that may minimise these weaknesses. A cognitive remediation service is due to be implemented within the hospital and these findings add further justification for the potential benefits of such an intervention. Research indicates that people with schizophrenia can benefit from cognitive remediation (Medalia & Choi,

2009), and as part of service evaluation the effectiveness of this intervention could be assessed in MDO's.

If replicating this study, as stated previously conducting neuropsychological assessment prior to treatment would be preferable. Using measures such as the Treatment Responsivity and Treatment Gain Scales (Serin, 1998) would allow a more specific measure of treatment responsivity to be established. These measures were developed to measure performance in CBT and if looking at several group treatments, they could be used across all groups to allow comparisons to be made. In order to ensure statistical accuracy the study would require repetition on a larger sample, particularly if using statistical methods of regression analysis.

10.71 Measuring Treatment Outcome

The use of valid, reliable psychometrics to assess outcome scores should always be used where possible in research. Although the majority of measures used in this study were valid and reliable, this should be ensured in future research. It may also be helpful to gain a qualitative perspective on participants' thoughts and feelings regarding treatment. This may reveal a more detailed analysis of factors affecting treatment responsivity.

10.72 Comparing Group Treatments

Although some comparisons were made between the groups in this study in relation to the predictive ability of cognitive impairment, the differences between the groups made this problematic. Future research should compare equal groups in terms of variables identified such as size of group, duration of treatment, type of group (Psycho-educational or CBT), skill mix of staff and use of similar outcome measures. This would allow a much fairer comparison to be made without other confounding variables potentially impacting on the results. It may then be possible to determine accurately if differences exist between CBT and psycho-educational groups, or if variables such as duration of treatment have an impact on results.

10.8 Summary and conclusions

Although weaknesses in this study were identified, the results highlight that cognitive impairment is associated with response to treatment in MDO's. This is important when considering what treatment to offer an individual, and how this may be maximised by initially identifying cognitive deficits for treatment. Furthermore, the results indicate that all aspects of cognition i.e. executive functioning, IQ, memory and attention are related to treatment response, and can therefore be viewed as viable treatment targets.

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APPENDIX 1

ETHICAL APPROVAL FROM SOUTH EAST SCOTLAND RESEARCH ETHICS SERVICE

South East Scotland Research Ethics Service

Waverley Gate
2-4 Waterloo Place
Edinburgh
EH1 3EG
Telephone 0131 536 9000

NHS Lothian

Name: Carol Overend
Address: The State Hospital
Lampits Rd
Carstairs Junction
Lanark
ML11 8RP

Date: 17/12/2010
Your Ref:
Our Ref: NR/1012AB13
Enquiries to: Alex Bailey
Direct Line: 0131 465 5679
Email: alex.bailey@nhslothian.scot.nhs.uk

Dear Carol,

Full title of project: Investigation of the relationship between cognitive impairment and treatment gain and adherence in mentally disordered offenders

You have sought advice from the South East Scotland Research Ethics Service on the above project. This has been considered by the Scientific Officer and you are advised that, based on the submitted documentation (Uni Thesis_Ethics_Proposal 16 Dec 10.doc), it does not need NHS ethical review under the terms of the Governance Arrangements for Research Ethics Committees in the UK. The advice is based on the following:

- *The project is an audit using only data obtained as part of usual care, but note the requirement for Caldicott Guardian approval for the use or transfer of person-identifiable information within or from an organisation*

If this project is being conducted within NHS Lothian you should inform the relevant local Quality Improvement Team(s).

This letter should not be interpreted as giving a form of ethical approval or any endorsement of the project, but it may be provided to a journal or other body as evidence that ethical approval is not required under NHS research governance arrangements. However, if you, your sponsor/funder or any NHS organisation feels that the project should be managed as research and/or that ethical review by a NHS REC is essential, please write setting out your reasons and we will be pleased to consider further. Where NHS organisations have clarified that a project is not to be managed as research, the Research Governance Framework states that it should not be presented as research within the NHS.

You should retain a copy of this letter with your project file as evidence that you have sought advice from the South East Scotland Research Ethics Service.

Yours sincerely,

Alex Bailey
Scientific Officer
South East Scotland Research Ethics Service

APPENDIX 2

ETHICAL APPROVAL FROM UNIVERSITY OF EDINBURGH

UNIVERSITY OF EDINBURGH / NHS SCOTLAND
CLINICAL PSYCHOLOGY TRAINING PROGRAMME

FEEDBACK SHEET FOR THESIS PROPOSAL FORM (Not R1)

(Please Note that this is <u>not</u> the form for the Research 1 Assessed Thesis proposals)

Marker: Emily Newman Date Marked: 10.03.2011

Trainee: Carol Overend

Proposal Title: Investigation of the relationship between cognitive impairment and treatment gain and adherence in mentally disordered offenders.

COMMENTS ON PROJECT VIABILITY

Please provide feedback on potential risks to the project, the ways in which these may be addressed and any recommended or required changes to the project. Please ensure that it is clear which (if any) changes are required.

This looks like an interesting study and luckily doesn't require recruitment or (additional) IRAS ethics approval within the available time frame. Presuming that data sets are complete, I do not see any issues with proceeding with the study.

Some additional comments are to think about are:

1. The power analysis is confusing. But I don't see the point of doing one at all if you are using a pre-existing data set and don't need to recruit.
2. Do you need additional approval to access this data e.g. Caldicott guardian approval? Is the project having any other ethical review e.g. have all the relevant School of Health forms been completed?
3. I think you could explain in greater detail how the results could allow more rigorous risk assessment and management of offenders (p2, end of first paragraph).
4. I am assuming that the cognitive tests and initial relevant measures were completed pre treatment- I'm sure they are but I don't think this is stated on the form!
5. When you write up in your thesis you don't need to replicate the inclusion criteria within the exclusion (both consent issues)
6. Are there actually 5 predictors in the regression? Looked like executive functioning had two scores.
7. What are the bivariate and univariate tests? This could be more specific (p9, methods of analysis)
8. I didn't follow the point about being within a two year time period- why would a significant finding cause you to look at those outside of this period? I think this point just wasn't clear (end of p8).

MARKER'S RECOMMENDATION FOR PROJECT (PLEASE CIRCLE ONE OPTION BELOW):

1. **The project should proceed in broadly its current form**

2. The project should proceed broadly in its current form subject to outlined revisions (these should be clear from feedback above)
3. The project should not proceed in its current form and should be reviewed further by the Research Committee

APPENDIX 3

ETHICAL APPROVAL FROM THE STATE HOSPITAL RESEARCH COMMITTEE

Carol Overend
Psychology Dept
The State Hospital

Tuesday the 1st of February 2011

Dear Carol,

Re: Cognitive Impairment and Treatment Gains/Adherence in MDOs.

Many thanks for your research proposal that was reviewed by the TSH Research Committee on 27th of January 2011. The committee found the proposal to be an interesting piece of work, and are happy to approve the study. This letter will be copied to the Associate Medical Director along with evidence of your ethical approval, and he will subsequently provide final management approval for the study to take place within TSH. However in addition to this, as outlined in the letter of exemption from SESREC, the committee approval is based upon approval being given for the use of the patient identifiable data from the Caldicott Guardian.

One condition of the research committees' approval is that you provide the committee with regular 6-monthly progress reports. This is an important mechanism by which the committee track progress, and is also a key component of our research governance processes. The committee also request a final report to be submitted at the completion of the study with a focus on recommendations for the implementation of the studies findings into practice within TSH.

If you require any further assistance, or have any feedback on the Research approval process then please do not hesitate to contact me.

Yours sincerely

JAMIE PITCAIRN
Research & Development Manager
The State Hospital

NHS
SCOTLAND

Carol Overend
Psychology Department
The State Hospital
Carstairs

Date 16 February 2011
Our Ref
Your Ref DA/aa
Enquiries to Ann Abernethy
Ext No 2221

Dear Carol

Re: Research Project: Investigation of the Relationship between Cognitive Impairment and Treatment Gains and Adherence in Mentally Disordered Offenders.

I write to you in relation to your request for approval from myself as the Caldicott Guardian for access to patient identifiable data from the Datix system. I am grateful to you for attaching to your request supporting information. Included in this supporting information was original documents sent to the South East Scotland Research Ethics Service and their response dated 17 December 2010, a letter from Jamie Pitcairn, Research and Development Manager, The State Hospital, dated 1 February 2011 and the recent e-mail correspondence we have had in relation to your study. I am also grateful to you for answering the additional questions I had in relation to this study. Having considered the information that you have supplied me I am happy to confirm that I give approval for you to utilise patient identifiable data, as contained within the Datix system, and that the use of such patient identifiable data will be as detailed within the documentation that you have sent to me.

Yours sincerely

Dr Duncan Alcock
Consultant Forensic Psychiatrist /
Joint Associate Medical Director / Caldicott Guardian

cc. Jamie Pitcairn, Research and Development Manager.
Professor Lindsay Thomson, Medical Director.

APPENDIX 4

THE DRUG KNOWLEDGE QUESTIONNAIRE

Name:_____Ward:_____Date:_____

Please tick Pre or Post group test:

Pre	
Post	

Pre/Post Drug Knowledge Questionnaire

	True	False
1. Cannabis is a class A drug	□	□
2. You can be given sentences of up to life imprisonment and fined unlimited sums of money for dealing in Class A drugs.	□	□
3. Ecstasy use can make you so overactive that your body dehydrates and overheats so much that you can die as a consequence	□	□
4. Inhaling solvents is not illegal so it is considered safe	□	□
5. LSD can look like a piece of paper, the size of a stamp	□	□
6. Magic Mushrooms are legally classified as Class C because they are relatively harmless	□	□
7. The effects of amphetamine use can last for around 1 or 2 hours.	□	□
8. Driving while under the influence of any stimulants help reaction times and therefore makes you a safer driver	□	□
9. Cocaine is thought not to be a psychologically addictive substance	□	□
10. Illegal drugs are responsible for a lot of crime in society	□	□
11. 'Poppers' cause you blood pressure to increase, your heart to slow down and the effects last for approximately 2 hours	□	□
12. You will know if you have some form of Hepatitis because your skin will become yellow	□	□
13. Hepatitis B & C is found in blood, saliva and the sexual fluids of both men and women	□	□
14. Only homosexuals and injecting drug users get HIV	□	□
15. There are currently 50 million people infected with HIV worldwide	□	□
16. Drugs that can be bought over the counter without a prescription are harmless	□	□

17. **A person can be charged with supplying drugs if they allow friends to use illicit substances in their home, even if that individual is not using them himself.** □ □

18. **Taking more than one drug at the same time has no potential negative consequences** □ □

19. **The beneficial effects of Benzodiazepine's, such as Vallium, can be lessened in as little as two weeks of daily use** □ □

20. **Taking illicit drugs can lower benificial effects of prescribed medication and increase the chance side effects.** □ □

21. **Substance abuse can lead people to be violent and uncontrolled in their behaviours** □ □

22. **Illicit drugs use can lead or trigger a relapse in long term mental health problems such as depression/anxiety/schizophrenia.** □ □

23. **There have been side effects such as confusion, sleep disorder, paranoia, depression and hallucinations reported with the use of ananbolic steriods.** □ □

24. **Withdrawal from Heroin use is often life threatening** □ □

25. **Whether opiate users inject or not they suffer from higher incidences of lung disease** □ □

APPENDIX 5

THE ALCOHOL KNOWLEDGE QUESTIONNAIRE

APPENDIX 6

THE FORENSIC ASSESSMENT OF KNOWLEDGE QUESTIONNAIRE

Forensic Assessment of Knowledge Tool (F.A.K.T)

We would like you to complete this short questionnaire, to find out what you know about mental illness.

If you need any help to fill this in, or more information, please ask.

Name: ☐ ☐

Pre: ☐ **Post:** ☐

Gender: Male: ☐ **Female:** ☐

Age group: 17 but less than 25 ☐

25 but less than 35 ☐

35 but less than 45 ☐

45 but less than 55 ☐

55 but less than 65 ☐

Part one: Foundation Knowledge Of Mental Illness

1) What do you understand the term mental illness to mean and what are its potential consequences?

2) How do you think a mental illness diagnosis is made?

3) What is your diagnosis?

4) What, in you opinion, are some of the causes of mental illness' such as Schizophrenia, psychotic depression, bipolar disorder etc.

5) a) Symptoms' of a psychotic illness are often divided into two categories, Positive Symptoms' & Negative Symptoms'. What do you think is the difference between these categories?

b) Please list some of the positive and negative symptoms' of a psychotic illness?

6) People who suffer from a psychotic illness can also sometimes suffer from symptoms of depression. Can you list any of the depressive symptoms?

7) People who suffer from a psychotic illness can also sometimes suffer from symptoms of anxiety. Can you list any of the symptoms of anxiety?

8) People who suffer from a psychotic illness can also sometimes experience symptoms from a previous trauma or Post Traumatic Stress Disorder (PTSD). Can you list any of the symptoms of PTSD?

F.A.K.T. Part 2: The Legal System

9) Please state below what section you are detained under.

10) a) Are you a restricted or non- restricted patient?

b) What is the difference between being a restricted or non-restricted patient?

11) What appeals are available to you as a State Hospital patient?

12) a) What body hears any appeals that are made?

b) Who are the people who can help you to make an appeal?

13) Please tick the box that shows what form you are on for your medication.

T2 ☐

T3 ☐

Do not know ☐

14) What is the difference between this T2 and T3 form?

15) If you were to receive medical treatment, for example for a physical complaint, who would be required to give consent?

16) If you wanted to look at your care plan or treatment plan, who would you need to ask to be able to do this?

17) If you wanted to look at your case notes, who would have to give consent to enable you to do this?

18) a) Who is your named person?

b) What is the purpose of having a named person?

19) What is an advanced statement?

F.A.K.T. Part 3: Coping Skills & Recovery

20) Please list some of the types of treatment you are aware of for mental illness.

21) Please tick the box that shows how important medication is in the treatment of mental illness

Very Important	Quite Important	Of little Importance	Unimportant
☐	☐	☐	☐

Please provide reasons for your response

22) Please list some of the possible reasons why someone with a diagnosed mental illness, who is currently well, may relapse into a more acute episode.

23) When people develop problems with their mental health, there can be some indicators that things are not going well and may be heading for a relapse. These indicators are often called 'early warning signs' Can you think of any commonly reported 'early warning signs'? (Thinking back there may be some that may have happened to you in the past)

24) Please tick the box that shows how important carers are in helping you through your illness

Very Important	Quite Important	Of little Importance	Unimportant
☐	☐	☐	☐

25) How can carers help?

26) If you or a member of your family noticed you were showing 'early warning signs', what could you do to prevent yourself from becoming worse and becoming unwell again?

27) Please list some of the types of support that are available for people who suffer from a mental illness (include both supports that are available when in the hospital and in the community)

28) Please list some other coping skills you could use, that are likely to be helpful in your recovery.

APPENDIX 7

THE UNDERSTANDING OF MEDICATION QUESTIONNAIRE

Understanding of Medication Questionnaire (MacPherson)

Name: ***Date:***

Please circle which assessment period this applies to: Pre : Post

I would like to ask you some questions about how much you know about the antipsychotic medication you are taking. If you are unsure of any questions, please feel free to ask.

1) What is the name of your medication	Score	0	1	2		
	Error	0	1			
2) What is the dose of your medication	Score	0	1	2		
	Error	0	1			
3) For how long does antipsychotic treatment usually need to continue	Score	0	1	2		
	Error	0	1			
4) How frequently do patients taking antipsychotics need to be reviewed by their doctors	Score	0	1	2		
	Error	0	1			
5) How does antipsychotic medication help patients						
(a) General problem area (feel better/helps sleep/nerves)	Score	0	1	2		
Prompt: what problems does it help	Prompt	0	1			
(b) Symptom relief (hallucinations, delusions)	Score	0	1	2		
Prompt: what problems does it help reduce	Prompt	0	1			
(c) Diagnostic (schizophrenia, manic depression)	Score	0	1	2		
Prompt: what condition does it treat	Prompt	0	1			
	Error	0	1			
6) Do you know the effects of stopping to take antipsychotic medication as shown by research	Score	0	1	2		
	Error	0	1			
7) Do you know of any side-effects of antipsychotic medication	Score	0	1	2	3	4
Prompt: does it effect muscles	Prompt	0	1			

Scoring
0 = no knowledge
1 = aware of side – effects, unable to describe;
2 = knows one side-effect;
3 = two or more side effects;
4 = knows three or more side effects, good account

8) Do you know of any special precautions patients are supposed to follow when taking this medication (alcohol/driving/machinery/sunlight/other drugs)	Score	0	1	2	3
Prompt: are there any problems or things you should avoid when taking antipsychotics	Prompt	0	1		

Scoring
0 = no knowledge
1 = aware of 'problems' unable to describe;
2 = aware of one specific precaution, minimal details;
3 = good account of two or more precautions

9) Understanding of tardive dyskinesia

(a) Have you heard of tardive dyskinesia? Can you describe it	Score	0	1	2
Prompt: has anyone ever mentioned a side effect of abnormal movements	Prompt	0	1	
(b) When does tardive dyskinesia occur				
Prompt: how long after the treatment was started does it usually occur	Score	0	1	2
(c) What problems does tardive dyskinesia cause to patient with it	Prompt	0	1	
Prompt: can the abnormal movements make people feel bad in any way	Score	0	1	2
(d) How is tardive dyskinesia treated				
Prompt: can it always be treated	Prompt	0	1	2
(e) How can tardive dyskinesia be prevented				
Prompt: is the dose of antipsychotic medication important	Score	0	1	2
	Prompt	0	1	
	Score	0	1	2
	Prompt	0	1	

10) Do you understand why antipsychotic medication is used despite the risk of side-effects	Score	0	1	2
Prompt: do you understand that the benefits of medication may outweigh the problems due to side-effects	Prompt	0	1	
	Error	0	1	

Knowledge scoring
0 = no understanding
1 = partial understanding
2 = full understanding

Prompt and error scoring
0 = absent
1 = present

Total scores
Total knowledge score = /35
Total prompt score = /11
Total error score = /7

APPENDIX 8

THE SOCIAL PROBLEM SOLVING INVENTORY

SPSI–R:S

Thomas J. D'Zurilla, Ph.D., Arthur M. Nezu, Ph.D., & Albert Maydeu-Olivares, Ph.D.

Client ID:_____ Age:_____ Gender: M F (circle one)

Date of Birth:_____/_____/_____ (mm dd yyyy) Today's Date:_____/_____/_____ (mm dd yyyy)

Instructions: Below are some ways that you might think, feel, and act when faced with problems in everyday living. We are not talking about the ordinary hassles and pressures that you handle successfully every day. In this questionnaire, a problem is something important in your life that bothers you a lot, but you don't immediately know how to make it better or stop it from bothering you so much. The problem could be something about yourself (such as your thoughts, feelings, behavior, health, or appearance), your relationships with other people (such as your family, friends, teachers, or boss), or your environment and the things you own (such as your house, car, property, or money). Please read each statement carefully and choose one of the numbers below that best shows how much the statement is true of you. See yourself as you usually think, feel, and act when you are faced with important problems in your life these days. Circle the number that is the most true of you. Do not erase if you want to change an answer, instead put an "X" through the answer you wish to change. Try to answer all of the questions.

		Not at All True of Me	Slightly True of Me	Moderately True of Me	Very True of Me	Extremely True of Me
		0	**1**	**2**	**3**	**4**
1.	I feel threatened and afraid when I have an important problem to solve.	0	1	2	3	4
2.	When making decisions, I do not evaluate all my options carefully enough.	0	1	2	3	4
3.	I feel nervous and unsure of myself when I have an important decision to make.	0	1	2	3	4
4.	When my first efforts to solve a problem fail, I know if I persist and do not give up too easily, I will be able to eventually find a good solution.	0	1	2	3	4
5.	When I have a problem, I try to see it as a challenge, or opportunity to benefit in some positive way from having the problem.	0	1	2	3	4
6.	I wait to see if a problem will resolve itself first, before trying to solve it myself.	0	1	2	3	4
7.	When my first efforts to solve a problem fail, I get very frustrated.	0	1	2	3	4
8.	When I am faced with a difficult problem, I doubt that I will be able to solve it on my own no matter how hard I try.	0	1	2	3	4
9.	Whenever I have a problem, I believe that it can be solved.	0	1	2	3	4
10.	I go out of my way to avoid having to deal with problems in my life.	0	1	2	3	4
11.	Difficult problems make me very upset.	0	1	2	3	4
12.	When I have a decision to make, I try to predict the positive and negative consequences of each option.	0	1	2	3	4
13.	When problems occur in my life, I like to deal with them as soon as possible.	0	1	2	3	4
14.	When I am trying to solve a problem, I go with the first good idea that comes to mind.	0	1	2	3	4
15.	When I am faced with a difficult problem, I believe that I will be able to solve it on my own if I try hard enough.	0	1	2	3	4
16.	When I have a problem to solve, one of the first things I do is get as many facts about the problem as possible.	0	1	2	3	4
17.	When a problem occurs in my life, I put off trying to solve it for as long as possible.	0	1	2	3	4
18.	I spend more time avoiding my problems than solving them.	0	1	2	3	4
19.	Before I try to solve a problem, I set a specific goal so that I know exactly what I want to accomplish.	0	1	2	3	4
20.	When I have a decision to make, I do not take the time to consider the pros and cons of each option.	0	1	2	3	4
21.	After carrying out a solution to a problem, I try to evaluate as carefully as possible how much the situation has changed for the better.	0	1	2	3	4
22.	I put off solving problems until it is too late to do anything about them.	0	1	2	3	4
23.	When I am trying to solve a problem, I think of as many options as possible until I cannot come up with any more ideas.	0	1	2	3	4
24.	When making decisions, I go with my "gut feeling" without thinking too much about the consequences of each option.	0	1	2	3	4
25.	I am too impulsive when it comes to making decisions.	0	1	2	3	4

APPENDIX 9

THE COPING RESPONSES INVENTORY

CRI-ADULT FORM

Item Booklet

Rudolf H. Moos, Ph.D.

Directions:

On the accompanying answer sheet, please fill in your name, today's date, and your sex, age, marital status, ethnic group, and education (number of years completed). Please mark all your answers on the answer sheet. **Do not write in this booklet.**

PAR **Psychological Assessment Resources, Inc.** • 16204 N. Florida Avenue • Lutz, FL 33549 • 1.800.331.8378 • www.parinc.com

9 8 7 6 5 4 3 2 1 Reorder #RO-2327 Printed in the U.S.A.

Part 1

This booklet contains questions about how you manage important problems that come up in your life. Please think about the most important problem or stressful situation you have experienced **in the last 12 months** (for example, troubles with a relative or friend, the illness or death of a relative or friend, an accident or illness, financial or work problems). Briefly describe the problem in the space provided in Part 1 of the answer sheet. If you have not experienced a major problem, list a minor problem that you have had to deal with. Then answer each of the 10 questions about the problem or situation (listed below and again on the answer sheet) by circling the appropriate response:

Circle"**DN**" if your response is **D**EFINITELY **N**O.	(**DN**) MN MY DY
Circle "**MN**" if your response is **M**AINLY **N**O.	DN (**MN**) MY DY
Circle "**MY**" if your response is **M**AINLY **Y**ES.	DN MN (**MY**) DY
Circle "**DY**" if your response is **D**EFINITELY **Y**ES.	DN MN MY (**DY**)

1. Have you ever faced a problem like this before?
2. Did you know this problem was going to occur?
3. Did you have enough time to get ready to handle this problem?
4. When this problem occurred, did you think of it as a threat?
5. When this problem occurred, did you think of it as a challenge?
6. Was this problem caused by something you did?
7. Was this problem caused by something someone else did?
8. Did anything good come out of dealing with this problem?
9. Has this problem or situation been resolved?
10. If the problem has been worked out, did it turn out all right for you?

Part 2

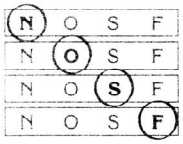
Read each item carefully and indicate how often you engaged in that behavior in connection with the problem you described in Part 1. Circle the appropriate response on the answer sheet.

Circle "**N**" if your response is NO, **N**ot at all.

Circle "**O**" if your response is YES, **O**nce or Twice.

Circle "**S**" if your response is YES, **S**ometimes.

Circle "**F**" if your response is YES, **F**airly often.



There are 48 items in Part 2. Remember to mark all your answers on the answer sheet. Please answer each item as accurately as you can. All your answers are strictly confidential. If you do not wish to answer an item, please circle the number of that item on the answer sheet to indicate that you have decided to skip it. If an item does not apply to you, please write **NA** (**N**ot **A**pplicable) in the box to the right of the number for that item. If you wish to change an answer, make an **X** through your original answer and circle the new answer. Note that answers are numbered across in rows on Part 2 of the answer sheet.

1. Did you think of different ways to deal with the problem?
2. Did you tell yourself things to make yourself feel better?
3. Did you talk with your spouse or other relative about the problem?
4. Did you make a plan of action and follow it?
5. Did you try to forget the whole thing?
6. Did you feel that time would make a difference—that the only thing to do was wait?
7. Did you try to help others deal with a similar problem?
8. Did you take it out on other people when you felt angry or depressed?
9. Did you try to step back from the situation and be more objective?
10. Did you remind yourself how much worse things could be?
11. Did you talk with a friend about the problem?
12. Did you know what had to be done and try hard to make things work?
13. Did you try not to think about the problem?
14. Did you realize that you had no control over the problem?
15. Did you get involved in new activities?
16. Did you take a chance and do something risky?
17. Did you go over in your mind what you would say or do?
18. Did you try to see the good side of the situation?
19. Did you talk with a professional person (e.g., doctor, lawyer, clergy)?
20. Did you decide what you wanted and try hard to get it?

21. Did you daydream or imagine a better time or place than the one you were in?
22. Did you think that the outcome would be decided by fate?
23. Did you try to make new friends?
24. Did you keep away from people in general?

25. Did you try to anticipate how things would turn out?
26. Did you think about how you were much better off than other people with similar problems?
27. Did you seek help from persons or groups with the same type of problem?
28. Did you try at least two different ways to solve the problem?
29. Did you try to put off thinking about the situation, even though you knew you would have to at some point?
30. Did you accept it; nothing could be done?
31. Did you read more often as a source of enjoyment?
32. Did you yell or shout to let off steam?

33. Did you try to find some personal meaning in the situation?
34. Did you try to tell yourself that things would get better?
35. Did you try to find out more about the situation?
36. Did you try to learn to do more things on your own?
37. Did you wish the problem would go away or somehow be over with?
38. Did you expect the worst possible outcome?
39. Did you spend more time in recreational activities?
40. Did you cry to let your feelings out?

41. Did you try to anticipate the new demands that would be placed on you?
42. Did you think about how this event could change your life in a positive way?
43. Did you pray for guidance and/or strength?
44. Did you take things a day at a time, one step at a time?
45. Did you try to deny how serious the problem really was?
46. Did you lose hope that things would ever be the same?
47. Did you turn to work or other activities to help you manage things?
48. Did you do something that you didn't think would work, but at least you were doing something?

APPENDIX 10

THE BARRATT IMPULSIVITY SCALE

BIS – II

INSTRUCTIONS

People differ in the ways they act and think in difference situations. Below are a list of statements which measure some of the ways in which you act and think. Do not spend too much time on any statement but decide how much the statement applies to you. Please answer quickly and honestly by circling the number.

1 = Rarely/Never applies to me
2 = Occasionally applies to me
3 = Often applies to me
4 = Almost always or always applies to me

		Rarely/ Never	Occasionally	Often	Almost Always/ Always
1	I plan tasks carefully	1	2	3	4
2	I do things without thinking	1	2	3	4
3	I am easy going	1	2	3	4
4	I have thoughts that race through my mind	1	2	3	4
5	I plan trips well ahead of time	1	2	3	4
6	I am self-controlled	1	2	3	4
7	I find it easy to concentrate	1	2	3	4
8	I save regularly	1	2	3	4
9	I find it hard to sit still for long periods of time	1	2	3	4
10	I am a careful thinker	1	2	3	4
11	I put effort into ensuring that I will have money to pay for my needs	1	2	3	4
12	I say things without thinking	1	2	3	4
13	I like to think about complex problems	1	2	3	4
14	I do not stick to jobs for long periods of time	1	2	3	4
15	I act on “impulse”	1	2	3	4
16	I find it boring to think about something for too long	1	2	3	4
17	I have regular/dental check ups	1	2	3	4
18	I act on the spur of the moment	1	2	3	4
19	I can keep my mind on one thing for a long time	1	2	3	4
20	I move frequently or I do not like to live in any place for a long time	1	2	3	4
21	I buy things on impulse	1	2	3	4
22	I finish what I start	1	2	3	4
23	I walk and move fast	1	2	3	4
24	I solve problems by trying something out and seeing if it will work	1	2	3	4
25	I spend more than I bring in	1	2	3	4
26	I talk fast	1	2	3	4
27	I have irrelevant thoughts when thinking	1	2	3	4
28	I am more interested in the present than the future	1	2	3	4
29	I am restless about the future	1	2	3	4
30	I am more interested in the future than the present	1	2	3	4

APPENDIX 11

THE IMAGINAL PROVOCATION TEST

IMAGINAL PROVOCATION TEST (IPT)

Name …… Group …….. Date ……

SCENE A

The nurse-in-charge accuses you of causing trouble in the ward. You tell him that you were not involved. He doesn't believe you. He says that you will lose your facility time and grounds access until there is a clinical team discussion. You try to put your point across but you are told to leave the office.

1. How angry does this make you feel?

Not at all	A little	Fairly	Very
1	2	3	4

If this happened to you:

2. You would swear or shout.

Not at all	A little	Quite a bit	A lot
1	2	3	4

3. You would want to hit the person.

Not at all	A little	Quite a bit	A lot
1	2	3	4

4. You would stay calm and cool.

Not at all	A little	Quite a bit	A lot
1	2	3	4

5. You would want to smash or kick something.

Not at all	A little	Quite a bit	A lot
1	2	3	4

6. You would want to tell the person off and start an argument.

Not at all	A little	Quite a bit	A lot
1	2	3	4

7. You would try to understand why the person did this and not get angry about it.

Not at all	A little	Quite a bit	A lot
1	2	3	4

8. How easy was it for you to imagine (see yourself) in this situation?

Very difficult	Difficult	Easy	Very easy
1	2	3	4

9. How easy was it for you to keep a clear picture of this situation in your head?

Very difficult	Difficult	Easy	Very easy
1	2	3	4

10. Remind me of what happened in this situation.
(*Underline each element that the patient is able to recall without prompting.)*

The nurse-in-charge accuses you of causing trouble in the ward/ You tell him that you were not involved/ He doesn't believe you / He says that you will lose your facility time and grounds access/ until there is a clinical team discussion/ You try to put your point across but you are told to leave the office. ***Score* =**

IMAGINAL PROVOCATION TEST (IPT)

Name …… Group …….. Date ……

SCENE B

You return to the ward and realise that your room has been searched, without your permission. It has been left untidy. You complain about this to staff. You're told that your permission is not technically required. You are left to tidy up the mess.

1. How angry does this make you feel?

Not at all	A little	Fairly	Very
1	2	3	4

If this happened to you:

2. You would swear or shout.

Not at all	A little	Quite a bit	A lot
1	2	3	4

3. You would want to hit the person.

Not at all	A little	Quite a bit	A lot
1	2	3	4

4. You would stay calm and cool.

Not at all	A little	Quite a bit	A lot
1	2	3	4

5. You would want to smash or kick something.

Not at all	A little	Quite a bit	A lot
1	2	3	4

6. You would want to tell the person off and start an argument.

Not at all	A little	Quite a bit	A lot
1	2	3	4

7. You would try to understand why the person did this and not get angry about it.

Not at all	A little	Quite a bit	A lot
1	2	3	4

8. How easy was it for you to imagine (see yourself) in this situation?

Very difficult	Difficult	Easy	Very easy
1	2	3	4

9. How easy was it for you to keep a clear picture of this situation in your head?

Very difficult	Difficult	Easy	Very easy
1	2	3	4

10. Remind me of what happened in this situation.
(*Underline each element that the patient is able to recall without prompting.)*

You return to the ward and realise that your room has been searched/ without your permission/ It has been left untidy/ You complain about this to staff / You're told that your permission is not technically required / You are left to tidy up the mess.

***Score* =**

IMAGINAL PROVOCATION TEST (IPT)

Name …… Group …….. Date ……

SCENE C

It's 7.30am and you have had a poor sleep. A nurse wakens you and abruptly says it's time to get up and puts your light on. He tells you to make your bed and have a shower. You're still lying in bed when another member of staff comes by and insists that you get up for a shower straight away.

1. How angry does this make you feel?

Not at all	A little	Fairly	Very
1	2	3	4

If this happened to you:

2. You would swear or shout.

Not at all	A little	Quite a bit	A lot
1	2	3	4

3. You would want to hit the person.

Not at all	A little	Quite a bit	A lot
1	2	3	4

4. You would stay calm and cool.

Not at all	A little	Quite a bit	A lot
1	2	3	4

5. You would want to smash or kick something.

Not at all	A little	Quite a bit	A lot
1	2	3	4

6. You would want to tell the person off and start an argument.

Not at all	A little	Quite a bit	A lot
1	2	3	4

7. You would try to understand why the person did this and not get angry about it.

Not at all	A little	Quite a bit	A lot
1	2	3	4

8. How easy was it for you to imagine (see yourself) in this situation?

Very difficult	Difficult	Easy	Very easy
1	2	3	4

9. How easy was it for you to keep a clear picture of this situation in your head?

Very difficult	Difficult	Easy	Very easy
1	2	3	4

10. Remind me of what happened in this situation.
(*Underline each element that the patient is able to recall without prompting.)*

It's 7.30am and you have had a poor sleep / A nurse wakens you and abruptly says it's time to get up and puts your light on / He tells you to make your bed and have a shower / You're still lying in bed when / another member of staff comes by / and insists that you get up for a shower straight away. ***Score =***

IMAGINAL PROVOCATION TEST (IPT)

Name …… Group …….. Date ……

SCENE D

You see a bully approaching a vulnerable patient. He demands some tobacco that the patient got from a family visitor. The patient looks confused and worried. The bully grabs him by the arm, threatens him and gets the tobacco. The bully walks away smirking.

1. How angry does this make you feel?

Not at all	A little	Fairly	Very
1	2	3	4

If this happened to you:

2. You would swear or shout.

Not at all	A little	Quite a bit	A lot
1	2	3	4

3. You would want to hit the person.

Not at all	A little	Quite a bit	A lot
1	2	3	4

4. You would stay calm and cool.

Not at all	A little	Quite a bit	A lot
1	2	3	4

5. You would want to smash or kick something.

Not at all	A little	Quite a bit	A lot
1	2	3	4

6. You would want to tell the person off and start an argument.

Not at all	A little	Quite a bit	A lot
1	2	3	4

7. You would try to understand why the person did this and not get angry about it.

Not at all	A little	Quite a bit	A lot
1	2	3	4

8. How easy was it for you to imagine (see yourself) in this situation?

Very difficult	Difficult	Easy	Very easy
1	2	3	4

9. How easy was it for you to keep a clear picture of this situation in your head?

Very difficult	Difficult	Easy	Very easy
1	2	3	4

10. Remind me of what happened in this situation.

(*Underline each element that the patient is able to recall without prompting.)*

You see a bully approaching a vulnerable patient/ He demands some tobacco that the patient got from a family visitor / The patient looks confused and worried / The bully grabs him by the arm, threatens him and gets the tobacco / The bully walks away smirking. ***Score* =**

APPENDIX 12

THE EMOTIONAL QUOTIENT INVENTORY

BarON EQ-i®

By Dr. Reuven Bar-On

Introduction

EQ-i® consists of statements that provide you with an opportunity to describe yourself by indicating the degree to which each statement is true of the way you feel, think or act most of the time and in most situations. There are five possible responses to each sentence:

1. Very seldom or Not true of me
2. Seldom true of me
3. Sometimes true of me
4. Often true of me
5. Very often true of me or True of me

Instructions

Read each statement and decide which *one* of the five possibilities best describes you. Mark your choices on the answer sheet by filling in the circle containing the number that corresponds to your answer.

If a statement does not apply to you, respond in such a way that will give the best indication of how you *would* possible feel, think, or act. Although some of the sentences may not give you all the information you would like to receive, choose the response that seems the best, even if you are not sure. There are no "right" or "wrong" answers and no "good" or "bad" choices. Answer openly and honestly by indicating how you actually are and *not* how you would like to be or how you would like to be seen. There is no time limit, but work quickly and make sure that you consider and respond to *every* statement.

1	My approach in overcoming difficulties is to move step by step.	1	2	3	4	5
2	It's hard for me to enjoy life.	1	2	3	4	5
3	I prefer a job in which I'm told pretty much what to do.	1	2	3	4	5
4	I know how to deal with upsetting problems.	1	2	3	4	5
5	I like everyone I meet.	1	2	3	4	5
6	I try to make my life as meaningful as possible	1	2	3	4	5
7	It's fairly easy for me to express feelings.	1	2	3	4	5
8	I try to see things as they really are, without fantasizing or daydreaming about them.	1	2	3	4	5
9	I'm in touch with my emotions.	1	2	3	4	5
10	I'm unable to show affection.	1	2	3	4	5
11	I feel sure of myself in most situations.	1	2	3	4	5

12	I have a feeling that something is wrong with my mind.	1	2	3	4	5
13	It is a problem controlling my anger.	1	2	3	4	5
14	It's difficult for me to begin new things	1	2	3	4	5
15	When faced with a difficult situation, I like to collect all the information about it that I can.	1	2	3	4	5
16	I like helping people	1	2	3	4	5
17	It's hard for me to smile.	1	2	3	4	5
18	I'm unable to understand the way other people feel.	1	2	3	4	5
19	When working with others, I tend to rely more on their ideas than my own.	1	2	3	4	5
20	I believe that I can stay on top of tough situations.	1	2	3	4	5
21	I really don't know what I'm good at.	1	2	3	4	5
22	I'm unable to express my ideas to others.	1	2	3	4	5
23	It's hard for me to share my deep feelings with others.	1	2	3	4	5
24	I lack self-confidence.	1	2	3	4	5
25	I think I've lost my mind.	1	2	3	4	5
26	I'm optimistic about most things I do.	1	2	3	4	5
27	When I start talking, it is hard to stop.	1	2	3	4	5
28	It's hard for me to make adjustments in general.	1	2	3	4	5
29	I like to get an overview of a problem before trying to solve it.	1	2	3	4	5
30	It doesn't bother me to take advantage of people, especially if they deserve it.	1	2	3	4	5
31	I'm a fairly cheerful person.	1	2	3	4	5
32	I prefer others to make decisions for me.	1	2	3	4	5
33	I can handle stress, without getting too nervous.	1	2	3	4	5
34	I have good thoughts about everyone.	1	2	3	4	5
35	It's hard for me to understand the way I feel.	1	2	3	4	5
36	In the past few years, I've accomplished little.	1	2	3	4	5
37	When I'm angry with others, I can tell them about it.	1	2	3	4	5
38	I have had strange experiences that can't be explained.	1	2	3	4	5
39	It's easy for me to make friends.	1	2	3	4	5
40	I have a good self-respect.	1	2	3	4	5
41	I do very weird things.	1	2	3	4	5
42	My impulsiveness creates problems.	1	2	3	4	5
43	It's difficult for me to change my opinion about things.	1	2	3	4	5
44	I'm good at understanding the way other people feel.	1	2	3	4	5

45	When facing a problem, the first thing I do is stop and think.	1	2	3	4	5
46	Others find it hard to depend on me.	1	2	3	4	5
47	I am satisfied with my life.	1	2	3	4	5
48	It's hard for me to make decisions on my own.	1	2	3	4	5
49	I don't hold up well under stress.	1	2	3	4	5
50	I don't do anything bad in my life.	1	2	3	4	5
51	I don't get enjoyment from what I do.	1	2	3	4	5
52	It's hard to express my intimate feelings.	1	2	3	4	5
53	People don't understand the way I think.	1	2	3	4	5
54	I generally hope for the best.	1	2	3	4	5
55	My friends can tell me intimate things about themselves.	1	2	3	4	5
56	I don't feel good about myself.	1	2	3	4	5
57	I see these strange things that others don't see.	1	2	3	4	5
58	People tell me to lower my voice in discussions.	1	2	3	4	5
59	It's easy for me to adjust to new conditions.	1	2	3	4	5
60	When trying to solve a problem, I look at each possibility and then decide on the best way.	1	2	3	4	5
61	I would stop and help a crying child find his or her parents, even if I had to be somewhere else at the same time.	1	2	3	4	5
62	I'm fun to be with.	1	2	3	4	5
63	I'm aware of the way I feel.	1	2	3	4	5
64	I feel that it's hard for me to control my anxiety.	1	2	3	4	5
65	Nothing disturbs me.	1	2	3	4	5
66	I don't get that excited about my interests.	1	2	3	4	5
67	When I disagree with someone, I'm able to say so.	1	2	3	4	5
68	I tend to fade out and lose contact with what happens around me.	1	2	3	4	5
69	I don't get along well with others.	1	2	3	4	5
70	It's hard for me to accept myself just the way I am.	1	2	3	4	5
71	I feel cut off from my body.	1	2	3	4	5
72	I care what happens to other people.	1	2	3	4	5
73	I'm impatient.	1	2	3	4	5
74	I'm able to change old habits.	1	2	3	4	5
75	It's hard for me to decide on the best solution when solving problems.	1	2	3	4	5
76	If I could get away with breaking the law in certain situations, I	1	2	3	4	5

	would.					
77	I get depressed.	1	2	3	4	5
78	I know how to keep calm in difficult situations.	1	2	3	4	5
79	I have not told a lie in my life.	1	2	3	4	5
80	I'm generally motivated to continue, even when things get difficult.	1	2	3	4	5
81	I try to continue and develop those things that I enjoy.	1	2	3	4	5
82	It's hard for me to say "no" when I want to.	1	2	3	4	5
83	I get carried away with my imagination and fantasies.	1	2	3	4	5
84	My close relationships mean a lot to me and to my friends.	1	2	3	4	5
85	I'm happy with the type of person I am.	1	2	3	4	5
86	I have strong impulses that are hard to control.	1	2	3	4	5
87	It's generally hard for me to make changes in my daily life.	1	2	3	4	5
88	Even when upset, I'm aware of what's happening to me.	1	2	3	4	5
89	In handling situations that arise, I try to think of as many approaches as I can.	1	2	3	4	5
90	I'm able to respect others.	1	2	3	4	5
91	I'm not that happy with my life.	1	2	3	4	5
92	I'm more of a follower than a leader.	1	2	3	4	5
93	It's hard for me to face unpleasant things.	1	2	3	4	5
94	I have not broken a law of any kind.	1	2	3	4	5
95	I enjoy those things that interest me.	1	2	3	4	5
96	It's fairly easy for me to tell people what I think.	1	2	3	4	5
97	I tend to exaggerate.	1	2	3	4	5
98	I'm sensitive to the feelings of others.	1	2	3	4	5
99	I have good relations with others.	1	2	3	4	5
100	I feel comfortable with my body.	1	2	3	4	5
101	I am a very strange person.	1	2	3	4	5
102	I'm impulsive.	1	2	3	4	5
103	It's hard for me to change my ways.	1	2	3	4	5
104	I think it's important to be a law-abiding citizen.	1	2	3	4	5
105	I enjoy weekends and holidays.	1	2	3	4	5
106	I generally expect things will turn out all right, despite setbacks from time to time.	1	2	3	4	5
107	I tend to cling to others.	1	2	3	4	5

108	I believe in my ability to handle most upsetting problems.	1	2	3	4	5
109	I have not been embarrassed for anything that I've done.	1	2	3	4	5
110	I try to get as much as I can out of those things that I enjoy.	1	2	3	4	5
111	Others think that I lack assertiveness.	1	2	3	4	5
112	I can easily pull out of daydreams and tune into the reality of the immediate situation.	1	2	3	4	5
113	People think that I'm sociable.	1	2	3	4	5
114	I'm happy with the way I look.	1	2	3	4	5
115	I have strange thoughts that no one can understand.	1	2	3	4	5
116	It's hard for me to describe my feelings.	1	2	3	4	5
117	I've got a bad temper.	1	2	3	4	5
118	I generally get stuck when thinking about different ways of solving problems.	1	2	3	4	5
119	It's hard for me to see people suffer.	1	2	3	4	5
120	I like to have fun.	1	2	3	4	5
121	I seem to need other people more than they need me.	1	2	3	4	5
122	I get anxious.	1	2	3	4	5
123	I don't have bad days.	1	2	3	4	5
124	I avoid hurting other people's feelings.	1	2	3	4	5
125	I don't have a good idea of what I want to do in life.	1	2	3	4	5
126	It's difficult for me to stand up for my rights.	1	2	3	4	5
127	It's hard for me to keep things in the right perspective.	1	2	3	4	5
128	I don't keep in touch with friends.	1	2	3	4	5
129	Looking at both by good points and bad points, I feel good about myself.	1	2	3	4	5
130	I tend to explode with anger easily.	1	2	3	4	5
131	It would be hard for me to adjust if I were forced to leave my home.	1	2	3	4	5
132	Before beginning something new, I usually feel that I will fail.	1	2	3	4	5
133	I responded openly and honestly to the above sentences.	1	2	3	4	5

APPENDIX 13

THE NOVACO ANGER SCALE PROVOCATION INVENTORY

NAS-PI

AutoScore™ Form

Raymond W. Novaco, Ph.D.

Name: _____ **ID Number:** _____ **Age:** _____

Date: _____ **Examiner ID:** _____ **Gender:** ☐ Female ☐ Male

Education (Years Completed): ☐ <6 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ >16

Race/Ethnicity: ☐ American Indian/Alaska Native ☐ Asian ☐ Black/African American ☐ Hispanic/Latino
☐ Native Hawaiian/Pacific Islander ☐ White ☐ Other _____

The statements in Part A describe things that people sometimes think, feel, and do. How true are they for you? For each statement, indicate whether it is (1) never true, (2) sometimes true, or (3) always true. Circle the number that best describes how true the statement is for you.

PART A

Never true	Sometimes true	Always true		
1	2	3	**1.**	When something wrong is done to me, I am going to get angry.
1	2	3	**2.**	Once something makes me angry, I keep thinking about it.
1	2	3	**3.**	Every week I meet someone I dislike.
1	2	3	**4.**	I know that people are talking about me behind my back.
1	2	3	**5.**	When something makes me angry, I put it out of my mind and think of something else.
1	2	3	**6.**	Some people would say that I am a hothead.
1	2	3	**7.**	My muscles feel tight and wound-up.
1	2	3	**8.**	When I get angry, I stay angry for hours.
1	2	3	**9.**	I walk around in a bad mood.
1	2	3	**10.**	If I feel myself getting angry, I can calm myself down.
1	2	3	**11.**	My temper is quick and hot.
1	2	3	**12.**	When someone yells at me, I yell back at them.
1	2	3	**13.**	I have had to be rough with people who bothered me.
1	2	3	**14.**	I feel like smashing things.
1	2	3	**15.**	When I am frustrated by a problem, I try to find a solution.
1	2	3	**16.**	I get angry because I have a good reason to be angry.
1	2	3	**17.**	I can't sleep when something wrong has been done to me.
1	2	3	**18.**	If I don't like someone, it doesn't bother me to hurt their feelings.
1	2	3	**19.**	People can be trusted to do what they say.
1	2	3	**20.**	I try to see positive things in other people.
1	2	3	**21.**	When I get angry, I get really angry.
1	2	3	**22.**	When I think about something that makes me angry, I get even more angry.
1	2	3	**23.**	I feel agitated and unable to relax.
1	2	3	**24.**	I get annoyed when someone interrupts me.
1	2	3	**25.**	I am able to stay cool in the face of pressure.
1	2	3	**26.**	If someone bothers me, I react first and think later.
1	2	3	**27.**	If I don't like somebody, I'll tell them off.
1	2	3	**28.**	When I get mad, I can easily hit someone.
1	2	3	**29.**	When I get angry, I throw or slam things.
1	2	3	**30.**	When I have a conflict with someone, I speak to that person about the problem.
1	2	3	**31.**	If I lose my temper with someone, it's because they deserved it.
1	2	3	**32.**	When someone makes me angry, I think about getting even.
1	2	3	**33.**	If someone cheats me, I'd make them feel sorry.
1	2	3	**34.**	People act like they are being honest when they really have something to hide.
1	2	3	**35.**	If someone says something nasty, I can swallow my pride and let it go.
1	2	3	**36.**	When I get angry, I feel like smashing things.
1	2	3	**37.**	Some people get angry and get over it, but for me it takes a long time.

continue on back page

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W-348A

4 5 6 7 8 9

Never true	Sometimes true	Always true		
1	2	3	**38.**	I have trouble sleeping or falling asleep.
1	2	3	**39.**	A lot of little things bug me.
1	2	3	**40.**	When I get agitated, I can relax by taking deep breaths.
1	2	3	**41.**	I have a fiery temper that arises in an instant.
1	2	3	**42.**	Some people need to be told to "get lost."
1	2	3	**43.**	If someone hits me first, I hit them back.
1	2	3	**44.**	When I get angry at someone, I take it out on whomever is around.
1	2	3	**45.**	If I disagree with someone, I try to say something constructive.
1	2	3	**46.**	The more someone bothers me, the more I'll get angry.
1	2	3	**47.**	I feel like I am getting a raw deal out of life.
1	2	3	**48.**	When I don't like somebody, there's no point in being nice to them.
1	2	3	**49.**	When someone does something nice for me, I wonder about the hidden reason.
1	2	3	**50.**	If someone is bothering me, I try to understand why.
1	2	3	**51.**	It makes my blood boil to have someone make fun of me.
1	2	3	**52.**	When I get mad at someone, I give them the silent treatment.
1	2	3	**53.**	My head aches when people annoy me.
1	2	3	**54.**	It bothers me when someone does things the wrong way.
1	2	3	**55.**	I can get rid of tension by imagining something calm and relaxing.
1	2	3	**56.**	When I get angry, I fly off the handle before I know it.
1	2	3	**57.**	When I start to argue with someone, I don't stop until they do.
1	2	3	**58.**	Some people need to get knocked around.
1	2	3	**59.**	If someone makes me angry, I'll tell other people about them.
1	2	3	**60.**	I can walk away from an argument.

Continue with the following items, unless you have been told to stop here.

For the statements in Part B, decide how angry each situation would make you feel. Circle the number that best describes how angry each situation would make you feel. Please give an answer for each statement, and give only one answer to each statement.

Not at all angry	A little angry	Fairly angry	Very angry		
1	2	3	4	**1.**	Being criticized in front of other people for something that you have done.
1	2	3	4	**2.**	You see someone bully another person who is smaller or less powerful.
1	2	3	4	**3.**	Someone keeps making noise when you are trying to concentrate.
1	2	3	4	**4.**	People who act like they know it all.
1	2	3	4	**5.**	Being slowed down by another person's mistakes.
1	2	3	4	**6.**	Someone cuts in front of you when you are in line to get something.
1	2	3	4	**7.**	You are watching a TV program, when someone comes along and switches the channel.
1	2	3	4	**8.**	People who don't really listen when you talk to them.
1	2	3	4	**9.**	You get cold food that is supposed to be hot.
1	2	3	4	**10.**	Someone looking over your shoulder while you are working.
1	2	3	4	**11.**	Someone else gets credit for work that you did.
1	2	3	4	**12.**	People who think that they are better than you are.
1	2	3	4	**13.**	Someone makes fun of the clothes you are wearing.
1	2	3	4	**14.**	You get singled out for correction, when someone else doing the same thing is ignored.
1	2	3	4	**15.**	You make plans to do something with a person who backs out at the last minute.
1	2	3	4	**16.**	People who think that they are always right.
1	2	3	4	**17.**	Just after waking up in the morning, someone starts giving you a hard time.
1	2	3	4	**18.**	Someone looks through your things without your permission.
1	2	3	4	**19.**	Being accused of something that you didn't do.
1	2	3	4	**20.**	You lend something to someone, and they fail to return it.
1	2	3	4	**21.**	Someone who is always disagreeing with you.
1	2	3	4	**22.**	You are hungry and tired, and someone plays a practical joke on you.
1	2	3	4	**23.**	You are overcharged by someone for a repair.
1	2	3	4	**24.**	You need to get somewhere in a hurry, but you get stuck in traffic.
1	2	3	4	**25.**	You are carrying a hot drink, and someone bumps into you.